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THE HEART DURING ANESTHESIA AND OPERATIVE PROCEDURES

BY H. M. MARVIN, M.D.†

Gentlemen:

I WELL recall my own confusion as an interne, and even in later years, upon attempting to learn how medical men decided when a patient with heart disease would withstand operation and when he would not. A similar confusion—or ignorance, if you will—as to the criteria which guide a medical consultant to his decision appears still to exist among the younger surgeons, and possibly among older ones, and it was my thought that it might not be wholly uninteresting to such of you to hear how some of us approach the matter. Let me ask in advance for the kindly tolerance of the surgeons and anesthetists who may be present if I err in technical details, for I speak as a medical man whose chief interest for some years has been the heart.

You will all appreciate that the subject as stated is far too broad to permit any adequate discussion in a short time, and I should like to restrict it to some extent at the outset. With your permission, I shall assume that chloroform may safely be omitted from our discussion, since it is universally recognized as dangerous and is very seldom employed in this country. Local anesthetics will be mentioned only in passing, since there is adequate reason for believing that they are without direct action upon the heart. I shall also take it for granted that when we speak of anesthesia we may assume that the anesthetic is administered by a competent person of some experience, and that we need not therefore consider the excessive cyanosis, struggling, vomiting and muscular rigidity which so often characterize the efforts of beginners. And lastly, although realizing that the true nature of surgical shock is still imperfectly understood, I shall take my stand with the majority of investigators in that field and assume that it is not primarily a condition for which the heart is responsible. Thus restricted, our discussion is concerned with ether, nitrous oxide, and ethylene, and with their effects upon the heart rather than upon the circulation as a whole. Since it is the heart itself, rather than the peripheral circulation, which most often occasions worry, the restriction is probably not excessive.

In reviewing my own experience with cardiac patients who have been subjected to anesthesia and operation, and in going over the pertinent literature of recent years, I have been impressed with the frequent allusions to the burden imposed upon the heart by these procedures, and especially impressed by the almost routine use of the phrase "stress and strain". Those of you who are often called upon to assist your surgical colleagues in arriving at a decision will doubtless agree with me that the chief question that is raised in respect of cardiac patients is this: "Will this patient's heart stand the stress and strain of an operation?" The phrase has little to commend it to a purist, or even to a cardiologist who is not a purist, but its frequent use serves admirably to indicate a belief that is apparently widely held, namely, that anesthesia and operation, of themselves, impose upon the heart burdens that must be seriously considered in deciding for or against operation upon patients with heart disease. The basis upon which such a belief rests would appear to be this: that during operations upon even normal individuals there may be observed disorders of the heart's rhythm, rapid heart action, a so-called thready pulse, low blood pressure, cyanosis, and disturbances of the respiration. It is true that, with the exception of the respiratory disturbances, these are all circulatory manifestations, but it is not true that they are to be regarded as indicating incompetency of the heart. The alarming disturbances in the heart's mechanism resulting in very rapid rates, regular or irregular, and often diagnosed acute dilatation of the heart, were shown by Dr. Levine some years ago to be due simply to the onset of mechanisms that had long been recognized and treated: auricular fibrillation, auricular flutter, or paroxysmal tachycardia. The onset of such a disturbance, far from indicating that the heart has encountered a burden beyond its powers, is really a matter of trivial importance, and one that can safely be ignored in the vast majority of patients until some hours after the conclusion of the operation. Rapid heart action (less rapid than that of the disorders just named) and cyanosis, if not due to direct operative interference with the respiration, are usually to be regarded as indicating incompetency of the anesthetist rather than of the heart. Low blood pressure, if so low as to lead to concern, usually means impending shock, and the belief that the heart is not primarily responsible for that com-

*Paper read before a joint meeting of the New England Heart Association and the Hartford County Medical Society, Hartford, Conn., April 3, 1928.

†For record and address of author see "This Week's Issue," page 583.

plex condition has already been indicated. Changes in the quality of the pulse are in themselves of little or no importance; the so-called thready pulse is usually but a manifestation of rapid heart action or low blood pressure or both. Changes in the respiration, it seems to me, might with greater reason be regarded as due to the action of the anesthetic agent upon the respiratory center, since ether is known to have such an action, and both of the other anesthetics are intentionally mixed with carbon dioxide by rebreathing in order that a stimulating action upon that vital center may be maintained. In other words, the alterations in the activity of the heart and of the respiration often regarded as indicating cardiac incompetency cannot logically be so regarded in most instances.

There is a further consideration that leads to much the same conclusion. In order to judge the response of the heart to any given load, it is customary to note the increase in the heart rate and the time required for its return to normal, to note changes in the heart's rhythm, changes in blood pressure, the occurrence of cyanosis or venous distention, and the effect upon the respiration. It is freely admitted that such determinations give but a rough approximation to the answer that we seek, but they probably represent the best we can obtain without elaborate apparatus. Now in a patient under anesthesia we cannot safely use cyanosis or respiration as guides, since they vary so widely and readily with changes in the proportion of carbon dioxide and oxygen, but we can make use of the remaining factors. And our question as to the burden thrown upon the heart is largely answered when we say that it is perfectly possible to subject a patient to anesthesia and operation for a period of several or many hours without any change in the normal mechanism of the heart, without venous engorgement, and without any significant change in the heart rate or blood pressure. That statement has been made so often by competent anesthetists that it might safely be quoted, but I make it with the greater confidence since I have personally counted the heart rate and determined the blood pressure at intervals of not more than two minutes throughout long operations upon many patients, and have studied the anesthetist's records of a great many more. If, then, the heart beats at its customary rate, or one very slightly greater, and if the same systolic and diastolic pressures are maintained, are we justified in saying that a definite burden has been thrown upon it by the anesthesia and operative procedure? I think the question must be answered in the negative.

Possibly some of you may object to so summary a dismissal of the action of ether, and may insist that definite, though slight, elevation of the heart rate and blood pressure is the rule when this anesthetic is used. From my own rather limited experience I would scarcely be willing to grant so much, if one assumes that the anesthetist is skillful, and disregards the stage of induction. But I know it is widely agreed that ether does exert a stimulating action upon the heart if the anesthesia is kept light, and for purposes of argument one may readily grant that there is a slight elevation of heart rate and of blood pressure in many patients. It is quite clear that such elevation imposes but little extra work upon the heart, and that such added work is the precise equivalent of that imposed upon the heart by the activities of normal life. There is no evidence, so far as I am aware, that such slight burdens damage, or even embarrass, a heart that is able in their absence to carry on an adequate circulation. Or, to express it more clearly, the elevation of heart rate and of blood pressure that may be ascribed to ether will not embarrass the heart unless the heart was in critical condition before anesthesia was begun.

The first point that I wish to emphasize, then, is that in my opinion far too much has been said of the stress and strain that fall upon the heart as a result of anesthesia and operation. There is very little evidence that any burden is imposed, and none, I believe, that any serious load is thrown upon that organ by an anesthetic properly administered for any reasonable period of time. Unquestionably, many patients have been deprived of the benefits that might have followed operation because of a baseless fear that the heart would be seriously, or even fatally, damaged by the procedure.

I can imagine many of you saying that this is but laboring a point already established and granted; that these statements may be true of a normal heart but do not apply to a diseased heart. The diseased heart and its relation to anesthesia and operation would appear to constitute the central point of our problem; in considering it, let me ask you to draw a very sharp distinction between heart disease and heart failure, and to keep clearly in mind that for every patient incapacitated by heart failure there are dozens with heart disease who are leading normal lives, many of them unconscious of their cardiac lesions. Now for purposes of anesthesia and operation, a heart that is damaged but that is carrying on an adequate circulation under normal conditions of life is the equivalent of a normal heart. I should like to make that statement more explicit by saying that no matter what size the heart may be, no matter what thrills or murmurs may be present over the precordium, no matter how far nor in what directions the sounds or murmurs may be transmitted, if the patient has been leading a life involving moderate activity and has been without symptoms, the heart may be regarded as the equivalent of a normal one, and it may be safely assumed that it will behave properly during anesthesia and operation. To that statement there is one exception that I hasten to mention. There are three types of heart disease that are notoriously apt to lead to sudden death, even with the patient at com-

plete rest: syphilitic heart disease with aortic insufficiency, ii, complete heart block as a manifestation of any type of heart disease, and, iii, that form of heart failure known as angina pectoris. It is quite clear that the vast majority of patients with complete heart block or with angina pectoris will not be able to lead normal lives without symptoms; the one possible exception to the statement made a moment ago, therefore, is syphilitic heart disease.

If the foregoing statements be true, the question might logically be asked, why trouble oneself to examine the heart? Why not simply question the patient as to his symptoms, and proceed with operation if he has had none referable to the heart? My own answer to such a question would be that reliance upon the history rather than upon the physical examination would represent a great advance over current methods. Doubtless an error would be made occasionally through failure to detect some important abnormality, but against that would have to be set the advantage that many necessary operations would not be refused because of cardiac enlargement or cardiac murmurs in the presence of normal cardiac function. I think no one would deny that the most helpful evidence we can obtain regarding the heart's functional condition is the record of its response to what might properly be termed the "stress and strain" of daily life: the walking, the running, the stair-climbing, the periods of emotional excitement, the innumerable mental and physical activities in which we all daily indulge. If then we seek information before operation as to the heart's fitness, why not apply the most helpful test that we possess?

If the history indicates early heart failure of the congestive type—that is, if there is a story of dyspnea on exertion, of having to sleep on two or more pillows, and of occasional afternoon swelling of the feet and ankles—physical examination becomes at once a matter of importance. If symptoms of heart failure are absent while the patient is at rest, and physical examination discloses no evidence of visceral engorgement, it is my experience that the heart will do perfectly well. In such patients, perhaps the safest single guide is the presence or absence of râles at the lung bases. If upon examination one finds that auricular fibrillation is present, and the ventricular rate more rapid than it should be, the reduction of the rate to normal by digitalis may cause the prompt disappearance of the symptoms and signs of heart failure. One may find the cardiac rhythm normal, and signs of congestion in the lungs, liver, and lower extremities; in such circumstances, rest and digitalis are urgently indicated before operation, if time will permit. Or, finally, one may find that both history and examination indicate advanced congestive heart failure with dyspnea, orthopnea, cough, engorgement of lungs and liver, edema of the lower extremities, and possibly fluid accumulations in the serous cavities. In such patients, operation would naturally be considered only for the most urgent indications, and the urgency of the surgical condition must dictate the decision. I wish in this connection only to point out that even with such advanced heart failure, treatment with rest, digitalis, and diuretics will often result in such improvement that operation may subsequently be performed with safety.

It is recognized, of course, that occasionally operation has to be performed as an emergency measure upon patients with advanced heart failure; there is no time for the institution of medical treatment; one has no choice, but must simply make the best of a bad situation. I believe the procedure that offers most in such circumstances is to administer a fairly large dose of digifolin, or a similar digitalis preparation, intramuscularly before or during the operation, and continue the treatment by oral administration of digitalis after recovery from the anesthetic. If it is impossible to give the drug by mouth because of the site of operation or because of nausea and vomiting, it may safely be continued by intramuscular injection or, preferably, by rectal administration of the infusion or the diluted tincture.

Thus far I have spoken of the preoperative treatment only as applied to patients with heart failure. But it is clear from current surgical papers and from conversations with medical and surgical friends that preoperative treatment is not in fact limited to such patients. It is the custom of some surgeons to administer digitalis routinely as a preoperative measure to all patients who are to be subjected to certain types of operation; others believe that it should be given to all patients with heart disease, even though the cardiac function is normal, and still others advise its routine administration to all elderly people before operation, whatever their cardiac condition. The chief arguments advanced in favor of such procedures are two: first, that digitalis strengthens the heart and thereby prevents a lowering of the blood pressure during or after operation; second, that digitalis will do no harm, and may conceivably do some good. It was my privilege several years ago to examine the validity of the first statement (that preoperative digitalization prevents a lowering of blood pressure during and after operation) by comparing the blood pressures in two similar groups of surgical patients, one of which had been completely digitalized before operation. Blood pressure determinations were made at intervals of two or two and a half minutes throughout operation, and three times a day for ten to twenty days thereafter. The results of that comparison seemed clearly to indicate that digitalis did no good whatever; they suggested that it actually did harm, for there was a much higher incidence of postoperative lowering of the blood pressure in those patients who had received the drug. I do not believe there is any real justification for the routine preoperative use of digitalis if it is

given for that purpose. The second statement—that the drug can do no harm, and may possibly do good—has little to commend it because of its vagueness, and recent evidence from investigations at Vanderbilt University appears to indicate that therapeutic doses of digitalis actually cause a decrease in the volume output of the heart in normal individuals. We therefore possess a definite reason for not giving it to such people. If the circulation is being normally maintained, it cannot possibly be improved, and I cannot express too strongly my feeling that it is a mistake to give any of the so-called "cardiac drugs" to normal people before operation.

I alluded briefly to the postoperative use of digitalis a moment ago in considering the necessity of emergency operations upon patients with heart failure. There is another circumstance widely regarded as an indication for the postoperative use of digitalis, namely, advanced age of the patient, the feeling being that aged people confined to bed for considerable periods of time are less apt to develop hypostatic pneumonia if they receive the drug. There is not time now to enter upon a discussion of the effects of digitalis upon the regular hearts of elderly people, nor are there sufficient data to enable us to reach any final conclusion, but I believe one may say with some confidence that there are no established facts which compel the belief that digitalis does good in such individuals in the circumstances mentioned. I am by no means prepared to deny that it may do good. From the standpoint of self-protection, the physician finds an adequate argument for its use in the fact that if he does not give it and the patient does badly, he will almost certainly be adversely criticized for having failed in his duty. With that aspect of the matter, the importance of which I recognize, we are not now concerned. An aspect that does concern us closely, however, is the question of dosage in such people. Realizing fully, as I do, that elderly people often cannot take the full doses of digitalis given to younger patients, and cannot take the drug as rapidly without developing toxic symptoms, it yet remains true that the vast majority of such patients whom I have seen have never had their hearts brought under the influence of digitalis because wholly inadequate doses had been given. To the question of dosage I shall return in a moment, but I wish to say at this point what has been said many times before: that one's rule should be to give full therapeutic doses or to withhold the drug altogether. I doubt very much if the small, so-called "tonic", doses accomplish anything beyond satisfying the conscience of the physician. The rule for calculation of dosage developed by Eggleston many years ago, and familiar to all of you under his name, requires the administration of 1.5 grams of the powdered leaf—15 c.c. of the tincture—for each one hundred pounds of body weight of the patient, as the total amount needed for digitalization. Many people feel that this amount is excessive, and prefer to use 1 gram per hundred pounds as the basis for calculation. My own custom has been to calculate the total dose according to Eggleston's formula, and then to administer a little less than the calculated amount if it is to be given rapidly. Whatever one's basis for estimation, the only point that needs emphasis at the moment is that it is necessary to give all, or most, of the calculated total if one is to expect maximal benefit.

As to methods of administration, the oral is unquestionably the most satisfactory from every standpoint if the patient is able to take medication by mouth and if time permits. If that is impossible, may own second choice is usually rectal administration of the infusion or the diluted tincture. Intramuscular or subcutaneous injections of the special digitalis preparations I would place third because the dosage is far less certain by this method and the administration not infrequently causes great discomfort. However, it is sometimes the only procedure that can be considered, and I have many times seen prompt and unquestionable benefit follow digitalization by that method.

It has often seemed to me that one of the most frequent causes of concern to the surgeon is the presence of irregularities in the heart's action. The common arrhythmias may be reviewed quite briefly, for the broad principles upon which decision should be based have already been indicated. The presence of premature beats, without other evidence of cardiac abnormality, is of no importance whatever, except that, if very frequent, they should suggest the possibility of the occurrence of paroxysmal tachycardia during or after the operation. Dropped beats, on the contrary, practically always indicate the presence of heart disease, since they are most frequently due to heart block, which is itself but a localized manifestation of widespread myocardial disease or degeneration. If, however, the dropped beats are due to the administration of too much digitalis, as they are occasionally in children and young adults, or if they are due to that form of sinus arrhythmia now known as sino-auricular standstill, they may be disregarded and the heart's fitness assessed on the basis of other findings. It is to be remarked that the differentiation of the important from the unimportant forms of dropped beats will often require the services of a skilled physician or even the use of graphic methods. Higher grades of heart block, leading to ventricular rates of 30 or 40 per minute, should always be regarded as serious, and as probably contraindicating any but the most urgent surgical procedures, unless the patient be one of those rare individuals who is able to lead a normal life with such a slow rate.

Paroxysmal tachycardia is not often a source of concern unless it occurs during or immediately after operation; in such circumstances

it is usually far more disturbing to the surgeon than to the patient. It is not a serious affair and almost always subsides within a short time without treatment. The same statement may be made with regard to auricular flutter and auricular fibrillation occurring during or shortly after operation; they usually cease spontaneously within a short time; if they persist for some hours they can be quickly controlled by means of digitalis, which is rarely necessary. I have no hesitation whatever in saying that no one of these disorders, occurring during operation, requires any treatment at the time, nor indeed for some hours after recovery from the anesthetic. Despite their rather alarming manifestations, they cannot be justly regarded as cardiac emergencies. Those of you who may be skeptical regarding the truth of that statement need only to be reminded that patients with heart disease, and even with heart failure, not infrequently develop paroxysms of tachycardia or of auricular fibrillation with very rapid ventricular rates which persist for several days, and are often none the worse for the experience.

Permanent auricular fibrillation, the commonest arrhythmia that requires consideration, is a condition that should be treated before operation if possible. If the fibrillating heart is under digitalis control, if the ventricular rate is at or near the normal level, and if signs of heart failure are absent, I think it may fairly be said that the patients will withstand anesthesia and operation just as well as similar patients whose hearts are regular. In my own experience there has been no exception to that statement.

Just a few words about the choice of anesthetics, and I shall be through. If it be true, as I tried to indicate earlier, that none of the usual anesthetics has any harmful action upon the heart, it should follow that it is a matter of indifference which one is selected. Within certain limits, I believe that to be absolutely true so far as the heart is concerned. But there are certain other considerations that should influence our decision. If one anesthetic involves a relatively long period of induction, with proportionately greater cyanosis, struggling, rise of heart rate and blood pressure, and production of mucus in the throat and bronchi, while another largely avoids these effects, it is clearly the part of wisdom to choose the latter. I am aware that there are certain types of operation and certain groups of patients—notably very young children—in which ether is regarded as practically the only choice; I am also aware that there are hundreds of operations being performed daily under nitrous oxide or ethylene anesthesia which one or two years ago were regarded as impossible of performance except under ether. For cardiac patients in general, with slight or even more advanced heart failure, ethylene seems to me the ideal anesthetic. When one has watched elderly patients with heart failure quickly and easily anesthetized without struggling, cyanosis, or vomiting, with no increase in heart rate or blood pressure, watched them progress smoothly through operation and subsequently recover from the anesthetic in two or three minutes without discomfort, it is difficult indeed to restrain one's enthusiasm for this newer anesthetic agent. Nitrous oxide seems to me the second choice, even though the heart rate may be slightly faster with this anesthetic, and ether the least desirable of the three except for special indications.

In advocating the gas anesthetics, I do so with a full realization that their administration requires great skill. I warned you at the outset that I would assume so much as granted; it seems to me impossible to discuss any procedure unless we assume that it is properly carried out. The difference between perfect and imperfect anesthetization is as the difference between day and night; to the patient, as one surgeon has said, it means the difference between a quiet normal sleep and a prolonged fight. Let me urge you, therefore, in conclusion, to concentrate your energies upon the selection of the anesthetist rather than upon the selection of the anesthetic agent.

This inadequate discussion may be summarized very briefly as follows: 1. There is no convincing evidence that anesthesia and operation, in themselves, have any damaging action upon the normal heart; 2. that a damaged heart, whatever its physical signs, is the equivalent of a normal one for anesthesia and operation if it is carrying on an adequate circulation under normal conditions of life, with the possible exception of the syphilitic heart; 3. that the history, therefore, is more important than the physical examination, although both should be obtained; 4. that patients with heart failure and those with auricular fibrillation, even without heart failure, should receive digitalis before operation if possible; 5. that the only important arrhythmias are auricular fibrillation and heart block; 6. that digitalis should be given in therapeutic doses or not at all; 7. that it should not be given as a routine preoperative measure; 8. that of the available general anesthetics, ethylene is probably the one that has most to commend it for use in patients with heart failure; and finally—possibly most important of all—that it is far more important to select the proper anesthetist than it is to select the proper anesthetic.

CHRONIC CONSTIPATION DUE TO CONGENITAL STENOSIS OF THE ANAL CANAL

BY T. CHITTENDEN HILL, M.D., F.A.C.S.,* AND E. PARKER HAYDEN, M.D., F.A.C.S.*

THERE is one cause of chronic constipation seldom thought of though fairly common and easily detected. We refer to the patient with a firm narrow band-like constriction at the level of the internal sphincter which offers decided resistance to the examining finger. This strictured area is above the external sphincter and usually located about one inch from the anal orifice, at which level the involuntary circular fibers, which make up the internal sphincter are congregated.

In this connection it should be recalled that there is a more common form of apparent obstruction at the anal outlet induced by certain painful diseases of the anal canal, such as concealed ulcer, anal fissure, or a blind internal fistula. The constant irritation of these lesions excites spasmodic contraction, which eventually produces stenosis due to both over-action and hypertrophy of the external and internal sphincter muscles. This type of case, because of associated painful symptoms, should be recognized early and receive appropriate treatment and is mentioned at this time to avoid confusion regarding the pathology under consideration.

The external sphincter, a perfectly definite muscle, arises from the tip of the coccyx, passes forward until it reaches the posterior margin of the anus, where it divides to surround the anal orifice, and is then reunited in front of the anus itself. It is a fairly thick band of voluntary muscle fibers which in its normal state is contracted, but is voluntarily relaxed when the patient strains as in the act of defecation.

On the other hand, the internal sphincter is not nearly so definite and in some subjects is barely perceptible, though ordinarily it is well defined and can be recognized as a thin elastic ring about 1/8 of an inch in width which easily dilates as the finger is inserted into the rectum. A slight interval of space separates the external from the internal sphincter, which can be detected on palpation of the anal canal.

Our clinical observations and the teachings of embryology lead us to believe that the narrowing of the gut at this point is invariably due to a non-elastic internal sphincter that has been present since birth. The normal anus easily admits the examining finger and is capable of considerable dilation if this procedure is carried out gradually and gently.

Apparently these non-elastic and tight internal sphincters are due to some congenital defect which occurs during foetal life. According to embryologists, the layers of the mesoblast are not present at the junction of the hindgut or enteron and proctodaeum, but are separated by two layers of epithelium, the one belonging to the hypoblast, the other to the epiblast. The existence of fibrous tissue in this epithelial septum, when not absorbed, produces the imperforate anus. When fibrous tissue is not present, absorption takes place naturally and renders the conjunction of the rectum and anus complete, forming a normal anal canal.

Is it unreasonable to suppose that the narrowed anal canal at the level of the internal sphincter occasionally encountered may be due to the presence of a small amount of fibrous tissue left behind, during the normal process of absorbing this septum?

In other words, the embryonic development of the anus and rectum has been only partially arrested, resulting in a congenital anomaly of limited extent, but in origin identical with various malformations peculiar to this region.

This brief reference to the anatomy and embryonic arrest of development of the anorectal region has been made to explain a condition occasionally seen in adults associated with constipation from birth. A somewhat analogous stenosis in this same region, usually accompanied by megacolon in early infancy, has been described by several writers,—Bartle, Fenwick, Wilms, David, and more recently by Joseph Brennemann in the *Journal of the A. M. A.*, August 27, 1927. A study of the reports by these authors would lead one to infer that the condition under consideration in these articles is of the same type but of a lesser degree of severity.

The following are a few cases which illustrate the symptoms of the condition under discussion:—

CASE I.—Mr. E. P., age 57, occupation, building contractor, had been very constipated all his life, and bowel movements were associated with a good deal of straining. For the past few months there was always pain after defecation, which lasted from 8 to 10 hours. He complained of a dull aching sensation in the lower rectum and a feeling of incomplete relief after defecation. At times there was some tenesmus. There were no rectal hemorrhages, protrusions, or discharges. He had taken all kinds of laxatives, and for the last few years had required a daily enema as well. He had had an appendectomy 15 years ago.

Rectal Examination—With considerable difficulty the index finger was passed into the rectum. There was a firm constricting ring at the level of the internal sphincter, which barely admitted the index finger. No hemorrhoids or fissure were visible.

The patient was sent to a private hospital. On the morning of operation the laboratory report showed considerable sugar in the urine. The pa-

*For records and addresses of authors see "This Week's Issue," page 583.

tient had not lost weight. He had frequent desire to urinate in the daytime, but not much at night. The prostate appeared normal. The patient was put on carbohydrate-free diet and the sugar quickly disappeared.

Operation—Under gas-ether anesthesia both external and internal sphincters were divided posteriorly and some redundant mucous membrane adjacent to the incision was removed by ligature. The incision was packed with gauze and allowed to heal by granulation.

Results—Four months later the patient reported for examination. The anal canal readily admitted the index finger and the bowels were moving regularly and without discomfort, though he occasionally took a mild laxative.

CASE II.—Miss F. E. B., age 55, occupation, executive, always had been constipated. For the last few years she had been much worse. She complained of pain and an aching sensation which was worse after defecation, a few drops of blood occasionally, no protrusions, or discharges. Unless the stools were liquid, the bowel movements were painful.

Past History—She had phlebitis and pneumonia ten years ago and neuritis eighteen years ago. She wrote the following letter regarding her symptoms:—

"I am troubled with constipation. I cannot seem to pass a movement that has much form to it, which sometimes makes me think everything is not just as it should be. I have to keep two or three things going at the same time in order to have a movement. Never a movement without. I bleed quite a little. Have had a bad spell recently. At present I am taking 3 senna pods (twice a day) in ½ glass of water, a teaspoonful of agar agar in hot milk twice a day and at night a tablet called 'Nature's Remedy.' I drink two glasses of water in the morning and one or two at night. Have tried being regular in going to the toilet without result. Everything loses its effect sooner or later. Am at a loss what to try next when these fail me."

Rectal Examination—The internal sphincter was very much stenosed, but it was thought it might dilate under general anesthesia.

Operation—Under gas ether anesthesia an attempted divulsion of the sphincters was made, but as the internal one was found very rigid and could not be safely stretched without rupturing the muscle, both external and internal sphincter were incised and a wick inserted in the incision.

The patient was seen six months later and reported that her constipation was greatly improved. She only occasionally resorted to laxatives.

CASE III.—L. C., age 75, had been constipated more or less all her life and was addicted to enemas and laxatives. She was confined to bed and complained of acute diarrhea for the past five days. She had been having from 10 to 12 small liquid dejections daily with constant tenesmus.

Rectal Examination—Internal sphincter moderately contracted, and above this level was a fair size impaction, which was relieved by digitally breaking up the mass, and by enemas. The patient was considerably improved by gradual dilation over a period of several weeks, though not completely relieved of her constipation.

CASE IV.—Mrs. J. C. J., age 37, housewife. Duration of symptoms "many years." With laxatives the patient's bowels moved two or three times a day. She remained a long time on the toilet and had the feeling that the rectum was never empty even after the bowels had moved. There was no bleeding, but she had hemorrhoids which protruded occasionally. The patient had been treated for spastic colitis and had been on a diet free from roughage. For the past three or four years she had been having a great deal of pain in the anal region.

Past History—The patient had undergone two extra-uterine pregnancies, an appendectomy, and a kidney operation during the past 10 years.

Operation—Was performed at a private hospital under gas ether anesthesia. On inserting the finger into rectum the internal sphincter was found to be hypertrophied and tight and impossible of dilation. It was divided by posterior incision. Three small internal hemorrhoids were excised.

The patient reported over a year later that all painful symptoms had disappeared and the bowels were moving regularly without laxatives.

CASE V.—Mr. C. F., age 39, a business man, had been constipated since birth. He was often obliged to take enemas to complete his bowel movements and felt there was some obstruction in the lower rectum. For a long time he had used two A. S. & B. pills and nujol every night. These laxatives, with an enema occasionally, were necessary to secure daily evacuation of the bowels. He had reduced twenty pounds in weight by diet and exercise, without any relief of constipation.

Digital Examination showed the internal sphincter abnormally contracted. There was a well marked recent anal fissure near the anal margin.

Operation—In a private hospital, under gas ether anesthesia, the fissure was excised the internal and external sphincter muscles divided very freely in the posterior median line. The wound was packed with gauze.

One year after operation the patient reported by telephone that his bowels had moved every day with one exception during the past six months.

Six years later he reported that the "bowels were very regular, and that he felt one hundred per cent. better than he did before the operation."

CASE VI.—A. G., single, age 60, had been taking laxatives all her life and for the last six years had resorted to frequent enemas. During the past three years she had had two fecal impactions that were removed under general anesthesia. The patient stated she was convinced "there was some obstruction low down that prevented her bowels moving naturally." Present symptoms strongly indicated another fecal impaction.

Rectal Examination—The internal sphincter barely admitted the index finger. A good sized impaction was felt and the patient sent to a private hospital.

Operation—Under gas ether anesthesia a posterior proctotomy was performed and a fecal impaction the size of a small orange removed.

Three years later this patient reported she had been free from recurring fecal impactions and that her bowel movements were regular with the aid of on occasional laxative, also, that the feeling of obstruction low down had disappeared immediately following the operation.

These are a few cases selected at random from a large number of similar ones seen in private practice. The operation performed and the one recommended for stenosis of the internal sphincter is posterior proctotomy, completely severing both external and internal sphincters. After this division the anal canal is freely relaxed without permanent injury to the function of the muscles as they are divided by a clean incision which later unites with a narrow band of scar tissue between the ends of the severed muscle. The calibre of the anal canal after this procedure is increased and soon resumes a very normal state. After the operation the wound is

lightly packed with sterile gauze and this wicking is not repeated. We have never noticed even a relative incontinence following this operation. Stretching the internal sphincter in this type of case tears and separates the fibers of this muscle, and as a result of this trauma, complete or partial incontinence is very apt to follow. If digital examinations of constipated patients were more freely practiced, not only this particular form of obstruction would be discovered but other conditions such as internal hemorrhoids, anal fissure, concealed ulcer and strictures, lesions which either cause obstruction or by irritation produce spasm and hypertrophy of the sphincter muscle. All such conditions should be relieved either medically or surgically as the first step in the treatment of chronic constipation.

TRAUMATIC ABSCESS OF THE OMENTUM

BY HORACE K. SOWLES, M.D., F.A.C.S.*

TRAUMATIC abscess of the omentum, as far as I have been able to discover from a search of the literature, has never been reported. Therefore, I wish to report the following as a unique case.

E. C., a male aged 43, employee of a Boston milk company, was admitted to the Lawrence Memorial Hospital Medford, July 5, 1925 with the following story: Patient states that six weeks ago while doing his regular work, which consists of lifting forty quart milk cans to the height of his shoulder and emptying them into a large vat, he received a severe blow on the abdomen. The blow occurred as follows: Somehow his fellow employee who was lifting the opposite side of each can either slipped or lost his hold upon a can so that it slipped, and the patient, in an effort to keep it from falling, received the full weight of it suddenly upon his upper abdomen. As a result of this blow he immediately suffered very intense pain over his upper abdomen, more severe on the left. He sat down for a while and an hour or so later felt so badly that he went home. He remained away from work for a day or two and then returned but did not feel well and was unable to do any lifting. Also, a large area of ecchymosis developed just to the left and above his umbilicus. He had not felt able to lift the forty quart milk cans since his injury. Four days before admission, after lifting a moderate weight, he was suddenly seized with a severe pain in the left lower quadrant. This pain gradually subsided. On the day of admission, without any warning, he suddenly had an attack of very intense pain in the left lower quadrant followed at once by vomiting and later by chills. His family physician was called and he was sent at once to the hospital. I saw the patient three or four hours after the onset of his last acute pain.

Physical examination showed a man of moderate height, well developed and nourished. The skin and mucous membranes were definitely pale and the facial expression indicated acute suffering. The heart and lungs were normal, the reflexes were normal; temperature 98.6, pulse 100, respiration 30, white blood count 20,000, urine normal. The abdomen was rigid throughout and extremely tender; there was no distention. I was unable to demonstrate any intra-abdominal fluid. There were no herniae. There was an area of slight discoloration about four inches in diameter over the left rectus muscle just above the umbilicus, which the patient identified as the remains of the ecchymosis which followed his injury six weeks ago. Athough there was no definite past history of gastric disturbance, a diagnosis of acute perforation of the duodenum or possibly of the appendix was made. The story of the six weeks old injury was minimized as probably having nothing to do with the present acute symptoms; in fact, the minor details of this story of his injury were not obtained until later. According to the preliminary diagnosis, operation was done at once under ether. Because the diagnosis was not absolutely certain, incision was made through the right rectus muscle just opposite the umbilicus. Some purulent fluid was found in the peritoneal cavity. Examination of the stomach and duodenum showed no gross pathology. Therefore, the incision was extended downward and it was found that there was more purulent fluid in the pelvis than in the upper abdomen. The appendix was adherent behind the cecum and was injected, but there was not enough inflammation to account for his symptoms. On exploring toward the left side of the abdomen, an inflammatory mass as large as a baseball was found. This mass was adherent to the under side of the abdominal wall directly beneath the site of the external discoloration. It was freed from the abdominal wall by dissecting with the fingers and was drawn up into the incision. It proved to be a mass of omentum and thick yellow pus was oozing from a small perforation on its posterior surface. The whole mass was excised. A drain was put in the left flank through a stab wound at the outer edge of the left rectus muscle. The incision on the right was closed without drainage. The patient was in fair condition following operation.

His post-operative convalescence was slow but uneventful. He had a hard fight against the sepsis and remained in a rather critical condition for one week. There was considerable superficial sepsis in the abdominal incision and he drained a good deal through the stab wound as well, but the incision and the stab wound cleared up slowly. The stab wound was entirely healed on the eighteenth day after operation. The patient was out of bed at the end of twenty-two days. The incision was entirely closed and the patient walking about in thirty-two days. He was discharged from the hospital on the thirty-fifth day after operation.

Pathological report—A piece of omentum, 14 cm in its greatest dimension, in the center of which is an abscess cavity about 4 cm in diameter. Microscopic examination shows infiltration with leucocytes and the usual appearance of acute inflammation.

Diagnosis—Traumatic abscess of the omentum with acute perforation into the abdominal cavity.

*For record and address of author see "This Week's Issue," page 583.

A NOTE CONCERNING THE EFFECT ON THEIR FUNCTION OF STRETCHING NERVE TRUNKS*

BY A. FORBES, M.D.†

OBSERVATIONS reported in the literature of physiology, although of interest to clinicians, may escape their notice, especially when reported incidentally with other data of less practical value. It seems desirable, therefore, to call attention to a series of experiments upon the effect of stretching mammalian nerve trunks, which may have an important surgical application. The nerve trunks of hind limbs of mammals are well adapted to such experiments; and presumably human nerves resemble them more closely than they do those of frogs.

In attempting to use mammalian nerves for experimental purposes I was baffled, some years ago, by the difficulty of obtaining consistent results. On stimulation of the sciatic nerve in the cat large action currents could usually be obtained for several hours after excision of the nerve from the body. Occasionally, however, and for no apparent reason, the usual response could not be elicited. This led to an investigation of the conditions of survival of mammalian nerve trunks, the results of which were published several years ago (Forbes and Ray, *Am. Journ. Physiol.*, 1923; 64, 435).

It is a familiar fact that the nerves of the frog usually continue to exhibit their function after the somewhat drastic treatment often given them by the average medical student. Injury to mammalian nerves, in the course of an ordinarily careful dissection, was not, therefore, anticipated. Yet some nerves failed to show action currents after such dissection, even though many precautions were taken to protect them from drying and from other injury. The question of whether the tension applied during dissection had caused the failure of function was therefore considered. To investigate this the sciatic nerve of a decerebrate cat was excised, the tension being reduced to a minimum by using the sharpest possible scalpel and scissors. In some experiments the whole sciatic nerve was used; in others it was split into its two component branches, the peroneal and popliteal, from the knee to the hip. With a sharp scalpel this can be done with very little tension. Threads were then firmly tied to the two ends of the nerve, so that tension could be applied and at the same time quantitatively measured by means of a spring balance.

These experiments invariably showed a marked impairment of function following moderate application of tension. The peroneal nerve, whose area of cross section is approximately 2 sq. mm., had its *action current wholly abolished, or reduced to a small fraction of its initial value, by 100 gram tension applied for about 1 second.* Even 25 grams invariably reduced the action current appreciably. On the other hand, the degree of reduction by a given amount of tension was by no means constant. Twenty-five grams is a small pull, and considerable care is required to dissect a nerve without subjecting it to this degree of tension. In some more recent experiments it has been noted by Dr. H. Davis that even the slight pull required to take up the sagging of the peroneal nerve between electrodes 15 mm. apart sufficed to reduce the action currents materially.

After a brief application of tension there is a certain measure of recovery of function even in an excised nerve. Presumably a nerve with its blood supply intact will recover more rapidly and more completely from a given amount of tension than will an excised nerve.

Similar experiments were carried out in the case of frog nerve. With these the results were entirely different. Two hundred grams applied to the sciatic nerve of a large bull-frog produced no appreciable decrease in the size of its action current. In general, the experiments showed that the tension per square mm. cross section which can be applied to a frog's nerve without appreciably impairing its response is at least ten times as much as that which, when applied to a cat's nerve, caused complete, or almost complete, disappearance of function.

The study of the literature of surgery between 1877 and 1891 shows that it was then common practice to subject the human sciatic nerve to tensions between 30 and 40 kilograms, in the treatment of sciatica. The sciatic nerve of man has approximately 6 times as large an area of cross section as that of the cat. Allowing for this difference, it is estimated that the tension recommended for effective treatment was more than 12 times as much per sq. mm. of cross section as that which sufficed to abolish function in the nerve of the cat. It is, therefore, not surprising that a blocking of sensory impulses resulted.

Many instances might be cited in which human nerves have been inadvertently traumatized by stretching in the course of surgical operations. Commonly a surgeon is obliged to apply great tension to peripheral nerves in effecting anastomoses. In such cases regeneration with restoration of function occurs in due course. Apparently tension does not add materially to the difficulty in the way of regeneration.

But when there is no need of disturbing the function of a nerve, and especially when such disturbance would be troublesome to the patient, avoidance of any sort of trauma is desirable. The evidence of great susceptibility of mamalian nerves to tension, shown in the experiments cited, suggests that even moderate stretching might well be included among the forms of trauma which should be avoided.

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†For record and address of author see "This Week's Issue," page 583.

SURVEY OF CHRONIC DISEASE IN BOSTON, MASS., 1927

Made by the Boston Council of Social Agencies, 43 Tremont Street, Boston

FOREWORD

THE care of the chronic sick and the aged, always difficult and important problems in social work, have been brought into special prominence in Boston during recent years through the movement to establish a municipal hospital for the chronic sick on the mainland, to take the place of, or to supplement, the one on Long Island. A crisis was reached early in 1926, when construction work, already begun on such a hospital on Parker Hill, was abandoned.

This development caused the Department on the Family of the Boston Council of Social Agencies to move for definite action to determine the true situation with respect to the care of the chronic sick and the aged in Boston. A joint meeting of the Departments on the Family, Children, Health and Hospital Social Service was held; and following a recommendation of this meeting, a committee of the Council was appointed "for the purpose of studying the question of the care of the chronic sick and the aged in Boston and to report to the Executive Committee with any recommendation for action by the Council, or members of the Council".

The Committee foresaw that a study of the aged as such would present a different problem from a study of the chronic sick, and that the two could be studied together profitably only by including those aged persons who were also chronically sick and excluding all other phases of the problem of the aged. In this way the scope of the study became definitely limited to a study of the chronic sick, irrespective of age.

The study was begun June 1st, 1927, with Miss Amy Hamburger as Survey Director and Dr. Haven Emerson as Consultant. An advisory medical committee was appointed under the chairmanship of Dr. Elliott P. Joslin, president of the Suffolk County Medical Society.

In presenting its report the Committee wishes to thank the hospitals, social agencies and individuals who, by their co-öperation, have made the study possible; the Committee of the Permanent Charity Fund, the Stearns Fund and the many individuals who have met the necessary expenses; the volunteers who have assisted in the gathering and tabulating of the data; the NEW ENGLAND JOURNAL OF MEDICINE for printing the report; and the Boston Health League for office space and for meeting the expenses of the public presentation of the report by Dr. Emerson.

ROY M. CUSHMAN, *Chairman*,
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DESCRIPTION OF THE PROJECT

Boston, in common with other cities, lacks a substantial basis for estimating the size of her problem of the chronic and incurable sick. Consequently she is without an intelligent plan for meeting the needs of this group. It was the purpose of this survey to secure first hand information as to the size and scope of this problem and the adequacy of existing resources for care; as well as to discover possible hitherto unrecognized needs which these patients may present.

Chronic disease, for the purposes of this study, is defined as a *pathological condition that lasts more than three months; which definitely interferes with normal activity, and in which the problems of medical and nursing care are dominant.* Pulmonary tuberculosis and mental disease are excluded.

Co-öperation was sought from the hospitals for the chronic sick, both public and private; from the social service departments of special and general hospitals; and from all social agencies in the city having contact with the chronic and the incurable sick. Among the latter were the Community Health Association; the Family Welfare Society, the Federated Jewish Charities; the Red Cross; and the several child placing agencies. In addition, information was sought from clergymen in and about Boston and from Boston physicians, members of the Suffolk District Medical Society.

The plan of inquiry aimed to secure the actual number of the Chronic Sick from all possible sources. It included the following nine approaches:

1. The records of patients of the hospitals for the chronic sick over a period of one year.
2. The chronic and incurable sick known to social workers, health workers, and case work agencies.

3. The applications for care in hospitals for chronic disease, over a period of three months.
4. The nursing and boarding homes.
5. Information from clergymen and physicians.
6. The number of aged chronic sick persons admitted and cared for by the Homes for the Aged.
7. A hospital census on a single day in the general and special hospitals for acute diseases, to determine the number of chronic and incurable patients under care, and something of their needs.
8. Admissions in two hospitals to discover the numbers of chronic sick patients remaining there twelve weeks or more.
9. A rapid review of the bed use in hospitals for the chronic sick, to gain some idea of their adequacy for caring for the chronic sick in the city, their capacity and their policies.

Preliminary meetings of the co-öperating group were held, and the approval of the Suffolk District Medical Society was secured.

The schedule on which each case was entered is shown on page 558:

The data called for by this schedule were secured by study of records of the hospitals for the chronic sick, and of the social agencies, and from interviews with patients known to health and social agencies.

All records of patients in the hospitals for the chronic sick were studied if they were either in those hospitals or had been there for any period between July 1, 1926 and June 30, 1927, inclusive. Verification and classification of the diagnoses as to chronic disease were made with the assistance of the resident physician, the medical director, or the visiting physician.

Approximately 100 social workers, representing all the co-öperating agencies, supplied the information required by the schedules, obtaining the medical data directly from the doctors or from hospital social service departments. Variations in time periods, where they existed, were stated on the schedules.

The hospitals for the chronic sick recorded for us all applications for care over a period of three months, whether accepted or refused, and if refused, the disposition.

Four hospital social workers made the review of nursing homes in co-öperation with the survey director.

Information from physicians and clergymen was obtained only by correspondence.

The examination of homes for the aged was made by staff representatives of the Catholic Charitable Bureau and of the Red Cross. A questionnaire was used, the information sought being the number of the aged chronic sick accepted and the general policies for care and disposition.

In order to secure a cross section view of the chronic and the incurably sick being cared for in the general hospitals at any one time, a census was taken of all these hospitals on Oct. 19, 1927, a time of year likely to show a fair average of the year condition. For this purpose a schedule constructed by the statistician of the Community Health Association and the Survey Director, was filled out by hospital social workers and medical social students from Simmons College School of Social Work, under the director of medical social work and in consultation, in each hospital, with house officers, resident and visiting doctors wherever practicable. This census secured data on age, sex, diagnosis and the expediency of care in (a) hospitals for acute cases; (b) hospitals for chronic diseases; (c) homes with district nurse attending; (d) boarding home with nursing care. Available information was secured also as to whether the patient was able to pay any or part or all of the charges for his care.

A further line of approach was secured by taking from the admission book of the Boston City and the Massachusetts General Hospitals the number, diagnoses and length of stay of all chronic and incurable patients who had remained there twelve weeks or longer. For the Massachusetts General Hospital the data were taken off and also compiled by the hospital social service department.

During the course of the study, information was secured from the superintendent of each of the hospitals for chronic diseases regarding general policies, bed capacity, methods of admission and of discharge. In addition visits were made to State institutions caring for chronic diseases and to summer hospitals for chronic patients.

RECOMMENDATIONS

1. The extension of hospital facilities for the care of the chronic sick, without differentiating as to curable or incurable condition, on the mainland, under public and also under private auspices.

   As to public auspices, there should be developed such a unit of care as will support and maintain a strong element of research analogous to that now carried on by the Thorndike Memorial at the Boston City Hospital.

   As to the private auspices, there should be further extension of present private hospitals; but such development should be made as part of a co-ördinated plan arrived at by conference and study after the manner suggested in the fifth recommendation following.

2. The development of hospital social service and of occupational therapy at the Long Island Hospital.

   The present efforts of this Hospital to secure better follow-up of out-going patients

CHRONIC DISEASE SURVEY No.

BOSTON COUNCIL OF SOCIAL AGENCIES

Date

Study of Chronic Hospital Patients from July 1, 1926 to July 1, 1927

Name of Institution or Agency — Med. Case No. / S. S. Case No.

Name of Patient — Address — Boston — Outside — Previous Address

Age	Sex—M. F.	White—Colored	Marital Condition S. M. W. D.	Names of Members of Family

Diagnosis	Probable Outcome	Duration of Illness	Bedcase—Ambulatory

For Patients in Hospital

Length of Stay—Free Patient
Part Pay and amount
Full Pay and amount

At Present—In Institution
At Home
Elsewhere (specify)

If Discharged—When
To Whom
Condition
"Followed" By Whom

For Patients at Home

Advisability of staying at home—Reasons

Advisability of going away—Reasons

If removed ability to pay at rate of $15.00 weekly

If Long Island was suggested state carefully patient's or family's reactions.

Known to S. S. Exchange

Additional Social Facts

and to secure funds for occupational therapy should be approved and an extensive development of both features permitted.

3. The development of an active visiting service for the Long Island Institution to encourage the development of friendly visiting, and to support the management in its efforts to encourage recreational activities and to brighten the lives of the inmates. This service should be auxiliary to the hospital social service recommended in the second section above.
4. Allowances by the Overseers of the Public Welfare, to those of their clients who are chronically sick, adequate to provide proper care outside the hospital where such care is socially and medically desirable.
5. A hospital council, representing all the hospitals, public and private, of Boston, for the purpose of increasing their usefulness, by co-ördinating their service and developing an integrated program of hospitalization for the community.
6. Registration and supervision of private nursing homes to be established by legislation and lodged in a State Department, logically the State Department of Public Health.
7. Extension of the activities of homes for the aged to a service for aged persons outside the Home, for those who would benefit from it, after the manner of the field service now rendered by the Home for Aged Men.
8. Extension of hospital social service in the hospitals of Boston, in order to serve the social needs of a larger number of chronic sick.
9. That a standing committee be set up by the Boston Health League, as a part of the Boston Council of Social Agencies, charged

TABLE I

NUMBER AND SOURCE OF CHRONIC AND INCURABLE PATIENTS REPORTED BY EACH INSTITUTION AND ORGANIZATION AS UNDER THEIR CARE OR OBSERVATION IN BOSTON DURING SOME PART OF THE SIXTEEN MONTHS BEGINNING JULY 1, 1926*

Institutions and Organizations	Total Number of Patients		Place of Residence: Boston		From Outside	
Total	4316		3508		808	
Chronic Hospitals:						
July 1, 1926 - June 30, 1927						
Boston Home for Incurables	41		20		21	
Holy Ghost Hospital for Incurables	218		80		138	
House of the Good Samaritan	273		189		84	
Long Island Hospital	890		854		36	
New England Peabody Home for Crippled Children	120		32		88	
Palmer Memorial Hospital	63		25		38	
Robert Breck Brigham Hospital	258	1863	167	1367	91	496
General Hospitals:						
Boston City Hospital, S-S Dept.	120		112		8	
Boston Dispensary, S-S Dept.	100		78		22	
Boston Lying-in Hospital, S-S Dept.	25		18		7	
Children's Hospital, S-S Dept.	56		56		0	
Huntington Memorial Hospital, S-S Dept.	13		6		7	
Mass. Eye and Ear Infirmary, S-S Dept.	23		12		11	
Mass. General Hospital, S-S Dept.	208		65		143	
Mass. Homeopathic Hospital, S-S Dept.	34		20		14	
Maverick Dispensary, S-S Dept.	6		6		0	
New England Deaconess Hospital, S-S Dept.	18		6		12	
New England Hospital for Women and Children, S-S Dept.	27		19		8	
Peter Bent Brigham Hospital, S-S Dept.	176		123		53	
State Infirmary, Tewksbury, S-S Dept.	213		202		11	
Visiting Doctors, Boston Dispensary	24	1043	24	747	0	296
Health Organizations:						
Community Health Association	1016	1016	1016	1016	0	0
Case Working Organizations:						
Boston Provident Association	20		20		0	
Children's Mission to Children	20		13		7	
Family Welfare Society of Boston	184		183		1	
Federated Jewish Charities of Boston	112		105		7	
Home for Aged Men (Outdoor Dept.)	58	394	57	378	1	16

*In the case of all but six of the listed institutions or agencies the period of record included twelve consecutive months in 1926 and 1927; for the others the periods were as follows:—Boston City Hospital, 3 months, March-May 1927; Mass. General Hospital, 3 months, December 1926-February 1927; New England Deaconess Hospital, 9 months, July 1926-March 1927; New England Hospital for Women and Children, 15 months, July 1926-September 1927; Boston Dispensary, Visiting Doctors, 1 month, April 1927; Community Health Association, 6 months, May-October 1927; the Case Working Agencies for 1 year.

with the continuing duty of considering the problem of the chronic sick. The information resulting from the recent survey has raised many questions which can be determined only by such additional studies as the need and the possibilities of extending home care of the chronic sick; the social and economic aspects of specific chronic conditions, such as heart disease, cancer, and arthritis; the relationship between relief and health agencies in the care of the chronic sick; the problem of the chronic sick in out-patient departments.

ANALYSIS OF STATISTICS

Number and distribution of chronic and incurable patients

Eliminating duplications, the total number of such patients known to the hospitals caring for chronic diseases, to health associations and to the case work agencies during some part of the sixteen months' period beginning July 1, 1926, was 4316. The hospitals for the chronic sick had known 43.1% of all these during a year's period. The social service departments of the general hospitals reported 24.1% and the Community Health Association, reporting for a six months period found 23.5%. The family or case working and relief agencies reported 9.3%. As will appear from Table I, the residence of 81% of all these patients was given on the case record as Boston, while 19% were reported as residing variously outside the city. In no case was the legal settlement of any patient sought or established.

Age, Sex and Marital Condition

Females outnumbered the males in a proportion slightly greater than their preponderance in the general population. They numbered 53.8%, the males 46.2%. The striking fact in the matter of age is that 17.7% of the entire number were children under 15 years of age. In this child group the males slightly preponderated, showing 18.3% as against 16.9%. In the middle years the females preponderated, but among those 60 years and over the males again were more numerous. A total of 41.4% of the whole group, including both sexes, were 60 years of age or over. The general population of Boston shows 26.4% under 15; 66.8% between 15 and 60 and 7.8% 60 or over. Thus though we are surprised at the large number of children among the chronic sick, we are well assured that basically the problem of the chronic and the incurably sick is a problem of advancing years. Of the 4316 patients 1876 were single; 302 married; 1016 widowed; and 93 divorced or separated. The status of 23 patients was not stated.

Race

There were but 109 colored patients in the total. There were 4 Chinese. The 97.3% of whites were not classified by race stock or country of birth.

Diagnosis

The diagnoses here used were classified according to the international list of causes of Death. Approximately one-fifth of the patients (845) are classified as heart disease. This is the largest single group. This factor is significant of a high incidence of disabling illness calling for long time care either in a hospital or in the patient's home under skillful supervision.

One of the most obscure of the chronic diseases, yet one that begins in early youth and causes serious and painful crippling conditions, is chronic arthritis, with which 467 patients in this study were afflicted. Of these 4.9% were under 20, and 36.4% were under 60. The 56.7% who were over 60, show again how frequently the aged arthritic is met with in modern life. This group, like the chronic heart cases, require long-time care, medical treatment and rehabilitation or education.

The non-pulmonary tuberculosis group, numbering 196, require prolonged care, sun-treatment and outdoor life. Seventy of our total had tuberculosis of the spine; 68, of the bones and joints; 26 tuberculous empyema; and 32 of other forms. Of the whole 196, nearly three fifths (58.5%) were children under 14. Infantile paralysis claimed 135 of the entire number of patients. The diagnoses, stated in the order of their numerical importance, are as follows:

SUMMARY FROM TABLE II

Diagnosis	Number
Heart Disease	845
Organic Nervous and Mental Disease	553
Cancer and Other Malignant Tumors	534
Arthritis	467
Arterio-Sclerosis (Varicose veins and other diseases of circulatory system)	427
Non-pulmonary Tuberculosis	196
Fractures and Burns	138
Infantile Paralysis	135
Venereal Disease	129
Old Age (Senility and Senescence)	115
Disease of Digestive System (Ulcer of the stomach, hernia, etc.)	97
Chronic Nephritis	89
Disease of Bones and Organs of Locomotion (Osteomyelitis, etc.)	80
Diabetes	50
Non-venereal Disease of the genito-urinary system	49
Chorea	49
Asthma	46
Chronic Alcoholism	42
Disease of Skin	40
Disease of Eye and Ear	38
Empyema	31
Chronic Bronchitis	29
Epilepsy	17
Others	120
	4316

Disposition

What has become of these chronic invalids? Though the hospitals and social agencies may not

TABLE III

DISPOSITION OF CHRONIC SICK AND INCURABLE PATIENTS BY INSTITUTIONS AND ORGANIZATIONS

Institutions and Organizations Reporting	Total Number of Patients Reported in Period of Record (See Table I)	*Patients Disposed Of as Stated*												
		In Hospital on Date of Record	In Care of Reporting Agency on Date of Record	DISCHARGED TO									Died	Disposition Not Known
				Almshouse	Case Working Agency	Chronic Hospital	Com. Health Assn.	Fam. Rela. or Lodging House	Nursing Home	Social and Health Agencies	State Hospitals and Instits.	Other Disposition		
Total	4316	788	807	266	26	52	10	1007	65	221	80	189	570	235
Chronic Hospitals:														
Boston Home for Incurables	41	35						1			1		4	
Holy Ghost Hospital for Incurables	218	116						11		1	3		87	
House of the Good Samaritan	273	52						146		17	2	6	50	
Long Island Hospital	890	348		266				14		3	21	6	166	66
New England Peabody Home for Crippled Children	120	95						17			4		4	
Palmer Memorial Hospital	63	23	2					11		2	1	3	8	13
Robert Breck Brigham Hospital	258	60	66		1	2		106	1	2		9	11	
General Hospitals:														
Boston City Hospital, S-S Dept.	120		15		6	12		48	1	5	10	8	14	1
Boston Dispensary, S-S Dept.	100		17		3	2		39		2	2	9	12	14
Boston Lying-in Hospital, S-S Dept.	25		8			1		9		3		3	1	
Children's Hospital, S-S Dept.	56		30		1	3	1	6		3		12		
Huntington Memorial Hospital, S-S Dept.	13		3					1	1		1	1		6
Mass. Eye and Ear Infirmary, S-S Dept.	23		1		1	3	1	8	1		4	4		
Mass. General Hospital, S-S Dept.	208		47		7	3		54	6		7	49	15	20
Mass. Homeopathic Hospital, S-S Dept.	34		2			5		14	3		3	2	5	
Maverick Dispensary, S-S Dept.	6		2			2		1			1			
New England Deaconess Hospital, S-S Dept.	18		10					2	1			5		
New England Hospital for Women and Children, S-S Dept.	27		4			2	1	5	3	1	4	3	3	1
Peter Bent Brigham Hospital, S-S Dept.	176		60		7	5	1	34	17	1	2	22	27	
State Infirmary, Tewksbury, S-S Dept.	213	59				1		31		1	1	4	19	97
Visiting Doctors, Boston Dispensary	24						4			4				16
Health Organizations:														
Community Health Association	1016		420			9		331	3	113	5	28	107	
Case Working Organizations:														
Boston Provident Association	20		5						6	4		2	2	1
Children's Mission to Children	20		10				1	1		7			1	
Family Welfare Society of Boston	184		56			1	1	56	12	27	5	8	18	
Federated Jewish Charities of Boston	112		29				1	49		23	3	5	2	
Home for Aged Men (Outdoor Dept.)	58		20					12	10	2			14	

have been in direct touch with some of the patients at the time this study was made, on the whole, they knew what had become of their patients. The disposition of all cases is set out in Table III. As appears from that table, 788 or 18.2% were still in the hospital, and 807 or 18.8% remained in the care of agencies. During the period studied 570 or 10.8% had died; while the whereabouts of 235 or 5.4% was unknown.

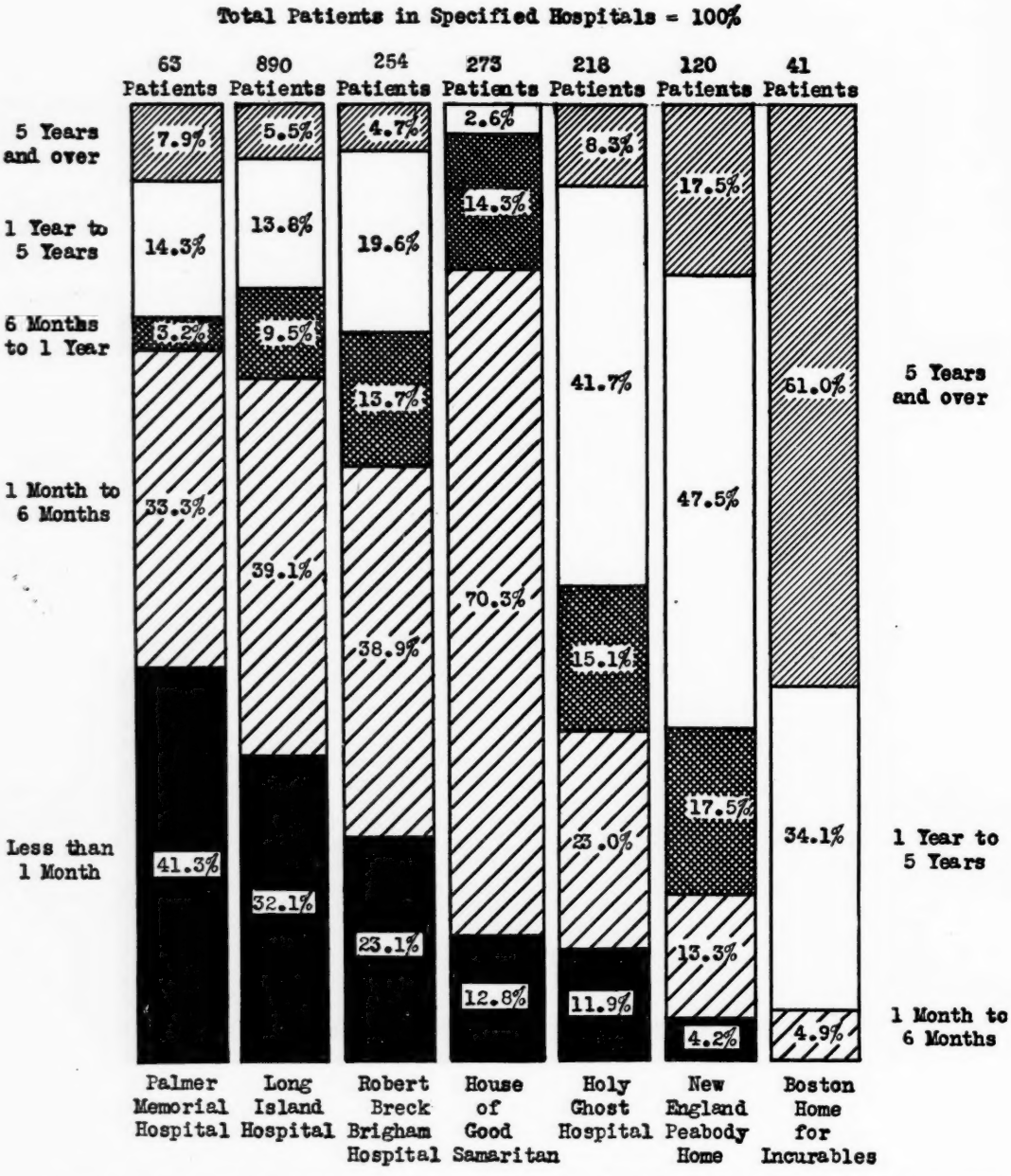
An analysis of the 1916 discharges from all types of care discloses the following disposition:—To almshouse 266; to case work agencies 26; to hospitals for chronic diseases, 52; to the Community Health Association, 10; to family, relatives or lodging house, 1007; to nursing home, 65; to social and health agencies, 221; to State hospitals and institutions, 80; all other, 189.

The relatively large number sent to the almshouse suggests more intensive social service than is available with present equipment at the

TABLE IV

DURATION OF INSTITUTIONAL CARE

OF CHRONIC SICK AND INCURABLE PATIENTS



Total number of patients, 258—(instead of 254 as given in third column)—4 of these were carried by Home Service and were never admitted to the hospital.

Hospital Department of the Boston Almshouse on Long Island, in order to follow further the social needs of these persons, so largely homeless and destitute.

The extensive use of lodging houses also presents a problem. Living conditions are usually such that no sort of care can be guaranteed. The visiting nurse is too badly handicapped to be effective, since there is usually no responsible person to carry out directions. To a degree the same criticism applies to the boarding homes. The visiting nurse's requirements should be the standard of eligibility in the choice of lodging house and boarding homes by those who are discharging patients chronically or incurably sick. It must not be overlooked that happiness, over and above adequate physical care is essential to the long time chronic patient. Companionship in a normal family home is conducive to such happiness. If it cannot be secured in the lodging-house, then other disposition should be arranged.

Duration of Institutional Care

Table IV sets out the length of stay of all patients in each of the seven hospitals for the Chronic Sick in percentages of the whole number cared for by each institution. It shows great variance in length of stay, depending largely upon the nature of care for which the respective hospitals exist. Thus the Boston Home for Incurables reports 61.0% of all its patients in residence more than 5 years, while the House of the Good Samaritan had none in this group and showed but 2.6% of the patients in the hospital remaining from 1 to 5 years. Over 83% of the patients in this hospital remained less than 6 months. The first of these institutions gives terminal care to the incurable, while the second serves a large group of children

TABLE V

DIAGNOSIS OF CHRONIC SICK AND INCURABLE PATIENTS CLASSIFIED BY DURATION OF ILLNESS

Diagnosis	Total Number of Patients	*Duration of Illness*									
		Less than 3 mos.	3 mos. and less than 6 mos.	6 mos. and less than 1 yr.	1 yr. and less than 2 yrs.	2 yrs. and less than 3 yrs.	3 yrs. and less than 4 yrs.	4 yrs. and less than 5 yrs.	5 yrs. and less than 10 yrs.	10 yrs. and over	Not known
Total	4316	151	410	584	560	419	355	285	592	474	486
I. Epidemic, Endemic and Infectious Diseases											
Infantile Paralysis	135		12	4	11	13	14	19	33	25	4
Tuberculous Empyema	26	2		4			1	1	8	3	7
Tuberculosis of Spine	70		2	4	10	10	8	5	20	7	4
Tuberculosis of Bones and Joints (not vertebral)	68		6	9	13	9	5	6	15	1	4
All other forms of tuberculosis (non pulmonary)	32		5	3	7	5	4	1	5	1	1
Syphilis	79		10	5	10	6	7	5	10	11	15
Gonorrhea	50	6		5	6	1		1	14	1	16
II. General Diseases not included in Class I											
Cancer and other Malignant Tumors	528	33	65	124	107	58	38	18	25	17	43
Benign Tumors, Cysts, etc.	8			1		2	1		1	2	1
Arthritis	467	9	15	35	50	48	32	34	92	115	37
Diabetes	50		3	5	8	8	7		7	6	6
Chronic Alcoholism	42	3	4	5	5	3	4	3	4	9	2
Other Chronic Poisonings	6				1		2	1	1		1
Anemia (Pernicious and Secondary)	22	1	5	2	4	2	2	2	2	1	1
Other General Diseases	19	3	2	3	3	1	2			5	
III. Diseases of the Nervous System											
Encephalitis	12			1	2	2	5		1		1
Tabes Dorsalis	41			1	2	4	5	2	9	10	8
Other Diseases of the Spinal Cord	69	1	2	2	2	3	10	3	19	24	3
Cerebral Hemorrhage and Shock	249	9	18	34	36	20	28	16	47	28	13
Other Paralysis	55	6	4	3	8	7	5	2	11	9	
General Paralysis of the Insane	10						4		5		1
Epilepsy	17				3	1		1	2	5	5
Chorea	49		13	16	9	4	4		1	1	1
Other Diseases of Nervous System	112	3	7	10	5	10	9	7	25	23	13
Disesaes of Eye and Ear	33		6	4	2	3	4	3	3	3	5

Diagnosis	Total Number of Patients	Duration of Illness: Less than 3 mos.	3 mos. and less than 6 mos.	6 mos. and less than 1 yr.	1 yr. and less than 2 yrs.	2 yrs. and less than 3 yrs.	3 yrs. and less than 4 yrs.	4 yrs. and less than 5 yrs.	5 yrs. and less than 10 yrs.	10 yrs. and over	Not known
IV and V. Diseases of Circulatory and Respiratory Systems											
Diseases of the Heart	845	29	84	131	94	97	66	76	108	70	90
Other Diseases of the Circulatory System	427	17	34	48	43	38	43	40	45	43	76
Chronic Bronchitis	29	1		1	4	1	6		6	4	6
Empyema	31	1	12	9	4		2			1	2
Asthma	46			8	5	6	2	6	11	5	3
Other Diseases of the Respiratory System	9		2	2	2	1		1	1		
VI. Diseases of Digestive System											
Ulcer of Stomach	19	2		4	6	1	1	1	2	2	
Hernia and Intestinal Obstruction	40	5	2	5	5	2	3		3	5	10
Cirrhosis and other Diseases of the Liver	23		7	4	1	4		2	1	3	1
Other Diseases of Digestive System	15	1	5	3	2	1			1		2
VII. Non Venereal Diseases of the Genito Urinary System											
Chronic Nephritis	89		8	13	17	9	4	10	11	8	9
Diseases of Prostate	13	1			3	1	2			1	5
Other Non Venereal Diseases of the Genito Urinary System	36		11	5	4	6	3	1	2	2	2
IX. Diseases of Skin and Cellular Tissue	40		7	9	8	3	3	4	3	1	2
X. Diseases of Bones and Organs of Locomotion	80	4	9	11	9	11	5	4	10	9	8
XI. Congenital Malformations	22	3	1	3	3	1	1	1	4	2	3
XII. Early Infancy	7	2							1	1	3
XIII. Old Age	115			8	19	11	7	3	17		50
XIV. External Causes											
Fractures	108	5	29	28	17	3	6	4	3	6	7
Other external violence including burns	20	1	4	7	1	2		1	1	2	1
XV. Ill Defined Diseases	9	3	5	1							
Unclassified	44		11	4	9	1		1	2	2	14

with chronic heart disease, the average duration of care for which is 3 months. The New England Peabody Home for Crippled Children had 17.5% who stayed more than 5 years, and 47.5% who were in residence from 1 to 5 years. These were largely children suffering from the after effects of infantile paralysis, and from tuberculosis of the bones. They require prolonged sun treatment and educational training.

At Long Island Hospital, only 5.5% remained more than 5 years. About one eighth (13.8%) remained from 1 to 5 years; 9.5% from 6 months to 1 year; 39.1% from 1 to 6 months; and 32.1% less than 1 month. The considerable number in this short term group is due in large part to the policy of requiring all admissions to the almshouse department to pass through the hospital for medical examination. At this institution almshouse patients go back and forth from almshouse to hospital as their condition may require.

Duration of Illness

For purposes of this study "duration of illness" is taken to mean the period beginning with the time the patient first noted symptoms and ending with the time at which he was last known to those who reported his case in this study. It must be observed therefore that many of those patients showing a short duration of illness do nevertheless constitute a continuing problem of care. Of the 4316 patients, 3.7% were recog-

nized at the time of the study as having been ill less than 3 months; 9.4% from 3 to 6 months; 13.5%, 6 months to one year; 13.1% from 1 to 2 years; 9.7% from 2 to 3 years; 8.2% from 3 to 4 years; 6.7% from 4 to 5 years. No data were available for 11.1%. These relatively long periods of illness bear directly upon the problem of maintaining a sufficient number of hospital beds. Eighty-five and two tenths per cent. were known to have been ill more than three months. Of the 894 chronic heart patients only 29 were ill less than 3 months. The 534 cancer patients had but 33 in the short term group. The 196 non-pulmonary tuberculosis cases showed but 2. Table V sets out the diagnoses of all patients classified according to the duration of illness.

Five Hundred non-resident patients: age and diagnosis

A special analysis of 500 of the 808 non-resident patients included in this study was made in order to ascertain the age grouping and the diagnoses. About one third (32.0%) were 14 years or under; 44.6% were between 15 and 60: and 23.4% were 60 or over. These children under 15 were suffering from chronic disabling illnesses which required long periods of care in a hospital or at home under medical supervision. This group, like that of the Boston resident, represents the health problems of youth; of adult working life; and old age. These cases came, presumably from towns and localities not equipped with facilities for their care.

Cancer claimed 121 of the 500; heart disease 98; non-pulmonary tuberculosis 84, arthritis 38; organic nervous and mental diseases 22. The remaining 137 were various.

Status under Care: Ambulatory and Bed Patients

For the purposes of this study a bed patient is defined as one who cannot attend to all his physical needs. Included in this definition are chronic and incurable invalids who can nevertheless get about in a wheel chair. Of the 4316 patients, more than one half (1863, or 55.7%) were ambulatory. Many of these require nursing care or medical treatment, but are physically able to be up and about. But it is to be noted that there are in this total of ambulatory patients many who are confined to bed at times, but who at the time of the study, were ambulatory. The heart patients are especially liable to shift from one condition to the other.

Of the 1043 patients known to social service departments of the general hospitals and dispensaries, 32.7% were bed patients, and 67.3% were ambulatory.

The 1016 chronic sick patients known to the Community Health Association showed 72.2% bed patients and 27.8% ambulatory. This large proportion of bed cases arises from the fact that patients able to be up and about are expected to go to the dispensary. Less than one half (42.3%) of the 1016 patients were 60 years of age or over. Thirty-eight per cent. were between 13 and 60; and 19.9% were under 13.

The 394 patients reported by the case work agencies were classified as 22.6% bed cases and 77.4% ambulatory. A detailed classification of the 4316 patients by place and status under care is contained in Table VI.

Cost of Care in Hospitals for the Chronic Sick

An attempt was made to secure from the hospitals for chronic diseases the number of their chronic cases who were able to pay all, or part, or none of the cost of care. In the total of 1935 patients reported by these hospitals, 327 were classed as full paying; 306 part paying; 1240 free. Sixty-two were not accounted for. The large number of free patients includes 890 public dependents at Long Island Hospital. The term "part pay patients" was used in the same sense in all the hospitals. It was generally assumed that such payment as the patient or his family could make, be it ever so small, had educational value and strengthened the feeling of responsibility. All of these institutions, except the Robert B. Brigham Hospital, collect from public relief authorities the cost of care for dependent cases coming from outside of Boston. Collections are also made in some instances from church, fraternal and other groups holding themselves chargeable for the care of their friends. Boston patients who are unable to pay are uniformly admitted free at the Robert Brigham Hospital and the House of the Good Samaritan. A relatively large number of patients appear to be able to pay at least a part of their hospital charges, even though the expense for chronic illness, so often long drawn out, is a heavy financial drain upon families and relatives.

In view of the number of free and part pay patients treated in the 7 hospitals for chronic diseases, it is interesting to note the reported cost of their care. The cost per patient day, ranged from $2.05 at Long Island, to $5.70 at both the Robert Brigham and the Palmer Memorial Hospitals. Intermediate figures were $3.06, $4.50, $5.30 and $5.56.

At the Robert B. Brigham Hospital, 15 patients paid from $2 to $7 a week; while 115 averaged from $30 a week for ward care to $5 to $15 a day in the private wards. One hundred and twenty-four were cared for free by the Home Service department. At the New England Peabody Home 48 paid from $1 to $5 a week; while 72 were free. At the House of the Good Samaritan, 162 paid from $1 to $10 a week, of which 13 paid $10 and 93 paid $5. The free patients totaled 111. The Holy Ghost Hospital had 48 who paid from $7 to $10 a week. Twenty were carried free; and 62 were not reported. Palmer Memorial Hospital cared for approximately half of their patients in the old building the first half of 1927 free or part paying. During the second half year, in the new building, all but 3 patients paid the full rates.

TABLE VI

CHRONIC SICK AND INCURABLE PATIENTS REPORTED BY INSTITUTIONS AND AGENCIES CLASSIFIED ACCORDING TO TYPE OF CARE, I. E., AMBULATORY AND BED

Institutions and Agencies	Total Number of Patients		Type of Care: Ambulatory		Type of Care: Bed	
Total	4316		2340		1976	
Chronic Hospitals:						
Boston Home for Incurables	41		19		22	
Holy Ghost Hospital for Incurables	218		189		29	
House of the Good Samaritan	273				273	
Long Island Hospital	890		541		349	
New England Peabody Home for Crippled Children	120		63		57	
Palmer Memorial Hospital	63		42		21	
Robert Breck Brigham Hospital	258	1863	187	1041	71	822
General Hospitals:						
Boston City Hospital, S-S Dept.	120		74		46	
Boston Dispensary, S-S Dept.	100		94		6	
Boston Lying-in Hospital, S-S Dept.	25		25			
Children's Hospital, S-S Dept.	56		29		27	
Huntington Memorial Hospital, S-S Dept.	13		5		8	
Mass. Eye and Ear Infirmary, S-S Dept.	23		23			
Mass. General Hospital, S-S Dept.	208		142		66	
Mass. Homeopathic Hospital, S-S Dept.	34		18		16	
Maverick Dispensary, S-S Dept.	6		6			
N. E. Deaconess Hospital, S-S Dept.	18		4		14	
N. E. Hospital for Women and Children, S-S Dept	27		11		16	
Peter Bent Brigham Hospital, S-S Dept.	176		105		71	
State Infirmary, Tewksbury, S-S Dept	213		176		37	
Visiting Doctors, Boston Dispensary	24	1043		712	24	331
Health Organizations:						
Community Health Association	1016	1016	282	282	734	734
Case Working Organizations:						
Boston Provident Association	20		17		3	
Children's Mission to Children	20		20			
Family Welfare Society of Boston	184		139		45	
Federated Jewish Charities of Boston	112		97		15	
Home for Aged Men (Outdoor Dept.)	58	394	32	305	26	89

NOTE: Diagnosis, Age and Sex are obtainable from the schedules, and this information can be made available to those who are interested in this further detail.

There were 20 free patients at the Boston Home for Incurables and 21 who paid from $1 to $10 a week. Two paid $100 upon entrance. The entire number of 890 patients at Long Island, the public institution, were free. At least 27 of the total cared for in the private charitable hospitals were paid for by cities and towns; by churches; and by relatives and friends.

Patients' reasons as reported for going to the hospitals for chronics

It is enlightening as a contribution to this study to record the reasons given by reporting authorities why chronically sick patients go or do not go to the hospitals for chronic diseases. While these reasons are various they reveal two chief sets of conditions which represent the determining factor in almost every case. The patient's reasoning begins invariably with home. His mind dwells upon his family if he has one, and his desire is that he may be cared for in his home if at all possible. Consequently it is not surprising to find that most of those who apply to the hospital for admission do so because they have no home, or if they have such, it is because there is no one in it who can provide adequate care. *Per contra* those who decline to go to the hospital do so chiefly because home, even though inconvenient, is preferable, in their estimation, to entering the strange and impersonal setting of an institution, if shift can be made at home.

Of the 38 patients in the Boston Home for Incurables 30 had no home and were without medical care. The remaining 8 had unsuitable homes or else had no one in them who could provide adequate care.

Of 115 patients in the Holy Ghost Hospital 48 neither had homes nor could get medical care, while 41 others either had unsuitable homes or had no one in them able to give the necessary care. In addition to these two groups there were 20 patients whose families were financially unable to provide the necessary care and 6 where the families refused to assume the responsibility.

In the House of the Good Samaritan practically 95 per cent. of all the patients came through the application of social service departments of general and special hospitals, Community Health nurses, or case working agencies. The reason is invariably that the necessary care cannot be given at home. This report was true of

95 per cent. of 157 chronic heart patients and more than one half of those who were suffering from cancer.

The patients in the public hospital at Long Island face as a group the hardest conditions of home life. The usual reason for going to the Island is the lack of a home or a failure of necessary care among their kin. In this group too, are a considerable number whose families have not the financial means to give medical and nursing care. The result is an appeal to public aid in securing it.

The New England Peabody Home for Crippled Children, among their 100 patients, had 84 whose homes were unsuitable for the special care required. But only two were reported to be without a home. The remainder had homes where for one reason or another the requisite medical care could not be provided.

The Robert B. Brigham Hospital, through its social service department, gives careful consideration to the practicability of caring for the prospective patient in his own home rather than in the hospital. Yet here too we find the same story for those admitted. Of 59 patients 25 reported the home unsuitable; 2 families were unable to give the necessary medical and nursing care; 5 were physically unable to supply such care; 3 others were financially unable; in 8 the responsible member was away at work and could not provide the care. There were 4 cases showing miscellaneous reasons or failure to provide home care. Only 7 reported no home at all.

The tenor of all these cases leads to the conclusion that the first consideration is the family home, and that the hospital is resorted to only in the last extremity, when home fails.

Looking at the reverse side of the picture we find further support of the conclusion just stated. Social workers in hospitals, Community Health nurses, and case working agencies were asked to give the reasons why the chronic sick known to them should be at home or should go away from home for the necessary medical care. The facts derived from these sources clearly indicate that each chronic patient has been carefully considered in relation to the medical care prescribed by the doctor and the possibilities of securing this care at home. Many such patients, it was found, required hospital treatment, and others home care, sometimes with the visiting nurse giving the supplementary nursing, and the medical attention being obtained from the visiting doctor or from the clinics.

Among the 1,237 patients classified by reasons for staying at home, 645 reported their families able to provide care. One hundred and twenty-five others could get the care at home with the addition of visits to clinics. There were 295 who could get along in their homes with the Community Health nurse and the visiting doctor providing the necessary supervision. And there were 50 more who could get along at home if the Community Health nurse and the clinics could provide the medical attention and supervision. This totals 1,115 or 90 per cent. of the whole number who had homes adequate with or without the outside help as stated. Of the remaining 122, the patient was sorely needed at home to carry the responsibilities of the household in 32 instances; in 25 the patient was in a lodging house and attended the clinic so that for the time he was under proper care; in 39 instances the patient "was happier with his family": in 10, all women, the patient refused to leave her children. Only 5 flatly refused hospital care, not furnishing further reasons.

It stands out as an obvious conclusion from this study of reasons, that the patient who is chronically sick requires expert medical advice from the doctor, and in some instances expert social advice from the social worker, before a satisfactory plan for his care can be made. Many patients can be cared for at home under the supervision of the Community Health nurse, the visiting doctor, and the social worker; others need care in a hospital for chronic diseases: or they need care in an adequate nursing home: or placement in a foster family. The practicability of caring for some of the chronic sick at home may depend upon adequate financial assistance from public sources, not as poor-relief but as a public responsibility for the care of the chronic sick, otherwise than as inmates of institutions.

THE HOSPITAL CENSUS DAY

In order to throw more light upon the number of the chronic and incurable sick in Boston, a census was taken of all chronic, and potentially chronic patients found in the general and special hospitals on a given day. All the hospitals in the city, 37 in number, were asked to participate. Ten of these replied that they accepted no chronics. Three were not heard from. The remaining 18 furnished the data asked for. The day chosen was Oct. 19, 1927, a season of the year calculated to afford a fair average cross section of the yearly problem of the chronic sick in this city.

Data for the large group at the City Hospital was secured through the hospital social workers, the nurses, and the hospital statistician. As far as practicable throughout the census the physicians most familiar with the condition of the patients were consulted. In some cases the visiting doctor supplied the medical facts while in others the house officers co-öperated.

By these means, 707 chronic and incurable sick patients were found to be occupying beds in these 18 hospitals on the census day. The census of all patients, chronic and acute was 3127. Of the larger total, 4.9% had been in residence 3 months, and 17.3% who had not yet accomplished a 3 months' residence were considered to need hospital care for more than 3

months. Both facts indicated the need of continued care and medical treatment in some institution.

The 18 hospitals, classified by normal bed capacity, and the number of chronic sick patients by length of stay and probable length of care are as follows:

Hospitals	Total Number of Beds	Beds Occupied Oct. 19, 1927	Patients in Hospitals 3 mos. or more	Patients Needing Hospital Care for at least 3 mos. more
Total	4068	3127	155	552
Boston City Hospital (main dept.)	959	843	75	200
South Dept., City Hospital	330	138	19	36
Mass. Eye and Ear	209	150	2	2
Mass. General	432	379	5	141
Mass. Homeopathic	530	390	10	23
Carney Hospital	250	130	15	5
Children's and Infants'	242	185	4	47
Adams Nervine	36	31	8	7
Faulkner Hospital	75	69	2	1
Beth Israel	50	40	1	3
Boston Lying-in	112	103	1	1
Hart	85	46	1	1
Huntington	22	14	1	10
N. E. Deaconess	175	171	3	30
N. E. Hospital for Women and Children	240	176	—	12
Peter Bent Brigham	246	213	7	32
Roxbury	75	49	1	1

Analysis of 626 cases

Out of the total of 3127 patients of all kinds found in the 18 hospitals on the census day, cards were filled out for 626 who were chronically ill. In this group the males totaled 52.8%, the females 47.2%. The principal age groups were as follows:

	Male	Female	Total
14 years and under	17.5%	25.4%	21.2%
15-29 years	13.3%	15.9%	14.6%
30-59 years	43.5%	35.2%	39.6%
60 years and over	25.7%	23.4%	24.6%

The extent of chronic disease among children is foreshadowed in the fact that 17.5% of all the males, and over one fourth of all the females were 14 or under. Though chronic diseases are the common attendants of old age, the large percentage for the middle years, as shown in this census, reveals their high prevalence in all stages of life.

Listed by diagnoses the principal groups in this total of 626 cases showed heart disease, at the top, with 92; cancer, 71; fractures, 57; infantile paralysis, 46; arthritis, 34; arteriosclerosis, 32; diabetes, 20; diseases of the bone (osteomyelitis) 18; non-pulmonary tuberculosis, 14; empyema, 13; cerebral hemorrhage, 12; benign tumor, etc., 12; chronic nephritis, 11; syphilis, 10; chorea, 4; and all other, 180.

The whole group, classified by age, sex and diagnoses is shown in Table VII.

Disposition recommended for the chronic sick in general and special hospitals

At the time of taking the census the doctors were asked what future plans they considered medically desirable. This information was added to that already in the possession of the social workers. The consensus of opinion indicated that of the 626 patients included in the query the best medical disposition would have sent 193 to hospitals for acute diseases; 222 to hospitals for chronic diseases; 101 to their own homes with district nursing care; 26 to boarding homes with nursing care. No statement was made in the case of 84 in this total. Disposition recommended, in its relation to diagnosis, is shown in Table VIII.

ANALYSIS OF REGISTRATION OF APPLICANTS FOR ADMISSION TO HOSPITALS FOR CHRONIC DISEASE

Constant difficulty is met with by patients, and by social agencies seeking to assist them, in securing admittance to the hospitals for chronic disease. In order to gauge the nature and the amount of this difficulty all such hospitals in Boston were asked to keep a record of all applications for a period of 3 months. Some of the hospitals were unable to participate and of these that did keep the register, some were prevented by pressure of work and lack of clerical assistance from keeping complete records. The net result of the effort was a register of 270 applicants for admittance, only 186 of whom were admitted to care. The proportion of acceptances, the refusals and the reasons, so far as secured, are given on page 571.

The hospitals that found it necessary to refuse patients in each case made a genuine effort to direct the applicant to other institutions, to health or to social agencies for proper care and assist-

TABLE VII

626 PATIENTS IN GENERAL HOSPITAL ON HOSPITAL CENSUS DAY CLASSIFIED BY DIAGNOSIS, AGE AND SEX.

Diagnosis	Total No. of Patients		AGE AND SEX																					
			Under 5		5 - 9		10 - 14		15 - 19		20 - 29		30 - 39		40 - 49		50 - 59		60 - 69		70 - 79		80 and over	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total	331	295	29	29	16	29	13	17	10	18	34	29	35	33	47	26	62	45	52	43	30	19	3	7
Infantile Paralysis	20	26	6	11	8	10	1	2	1	2	3		1	1										
T.B.Empyema	1										1													
T.B.Spine	5	1	1					1			3		1											
T.B.Bones & Joints	3		1		2																			
All other forms of non pulmonary T.B.		2								1				1										
Syphilis	4	6		2					1		2	1	2	2			1	1	1	1	1			
Cancer	42	29											2	1	11	6	12	8	9	10	6	3		
Benign Tumors Cysts etc.	6	6	1		1						2		1	3	1	1		1		1				
Arthritis	11	23				1		2	1			4	4	8	1	2	1	3	1	2	2		1	1
Diabetes	6	14					2							2	1	1	1	6	2	5				
Chronic alcoholism	10												5						3		2			
Other chronic poisonings	3												1		1		1							
Anemia (pernicious & secondary)	1	4								1		1		1		1			1					
Other general diseases	6	7	2	6										1	2		1		1					
Encephalitis	1	2						1				1			1									
Tabes Dorsalis	3												1				2							
Other diseases of spinal cord	2	7	1					1		2		4			1									
Cerebral Hemorrhage & shock	4	8														2	1	2	1	3	2	1		
General paresis of the insane		2														1		1						
Other paralysis		1																				1		
Epilepsy	1	2				1					1			1										
Chorea		4				1		3																
Other diseases of nervous system	9	7	1			1	1			1	2		1	1	1	1	3	1		1				1
Diseases of eye & ear	5	6	2	2	1	2				2	1				1									
Heart disease	47	45		1	2	4	2	2	2	2	1	7	2	4	8	5	11	3	15	9	4	6		2
Other diseases of circulatory system	15	17									1		4	1		2	2	7	3	5	5			2
Chronic bronchitis	1	2								1							1			1				
Empyema	7	6		4				1	1			1	1				2		2		1			
Asthma	2	2		1			1										1	1						
Other diseases of the respiratory system	7	5		1			1		1	1	1	1	1	1	2		1					1		
Ulcer of the stomach	8	2									2		3	1				1	3					
Hernia & intestinal obstruction	4	1								1							3		1					
Cirrhoses & other diseases of the liver	5	1							1								3		1			1		
Other diseases of digestive system	8	5	1		1		1			2	2		1		2			3						
Chronic nephritis	6	5				2				1	2					1			3	1	1			
Diseases of the prostate	7																4							
Other non venereal diseases of genito urinary system	2	5									2	4		1										
Diseases of skin & cellular tissue	3	1							1		1					1	1							
Diseases of bones & joints	11	7	3			3	1	3			2				3		1	1	1					
Congenital malformations		4				2				1		1												
Early infancy	8		8																					
Old Age		4																2				2		
Fracture	39	18	2		1	1	1				3	1	4	2	11	2	8	3	4	4	3	4	2	1
Ill defined		1												1										
For medical observation	2	6		1		1		1			1	2					1	1						
Unclassified	6	1					2		1		1	1	2											

The figure 3 should appear under the classification Diseases of the prostate—sub-division 70-79 M.
The word "paresis" is incorrectly spelled. It is correct as it appears here.

TABLE VIII

DISPOSITION RECOMMENDED FOR CHRONIC SICK IN HOSPITALS FOR ACUTE OR GENERAL SICKNESS ON CENSUS DAY, OCTOBER 19, 1927

Diagnosis	Total Number of Patients	Hospital for Acute Cases	Hospital for Chronic Cases	Home with District Nurse	Boarding Home, in Nursing Care	Not Stated
Total	626	193	222	101	26	84
Infantile paralysis	46	1	8	10		27
T. B. Empyema	1		1			
T. B. Spine	6	1	3			2
T. B. Bones and Joints	3		3			
Other forms of non pulmonary T. B.	2		2			
Syphilis	10		3	6		1
Cancer	71	19	40	11	1	
Benign Tumors, etc.	12	6	6			
Arthritis	34	3	16	10	2	3
Diabetes	20	5	6	8		1
Chronic Alcoholism	10		1			9
Other chronic poisonings	3	3				
Anemia (Pernicious and secondary)	5	2		2	1	
Other general diseases	13	12		1		
Encephalitis	3	1	1	1		
Tabes Dorsalis	3		3			
Other diseases of spinal cord	9	7	2			
Cerebral hemorrhage and shock	12	1	6	3	2	
General Paralysis of Insane	2		1			1
Other paralysis	1			1		
Epilepsy	3	1		1		1
Chorea	4	1	2		1	
Other diseases of nervous system	16	7	7		2	
Disease of eye and ear	11	7	2		1	1
Heart disease	92	18	47	14	9	4
Other diseases of circulatory system	32	13	12	5	1	1
Chronic bronchitis	3	1		1		1
Empyema	13	9	3			1
Asthma	4		4			
Other diseases of respiratory system	12	5	6	1		
Ulcer of the stomach	10	7	1	1		1
Hernia and intestinal obstruction	5	3	1			1
Cirrhoses and other diseases of liver	6	3	3			
Other diseases of digestive system	13	5	4	1		3
Chronic nephritis	11	6	4	1		
Disease of Prostate	7	5		2		
Other non venereal diseases of genito urinary system	7	4		2		1
Disease of skin and cellular system	4	1	1	1		1
Disease of bones and organs of locomotion	18	6	2	6	4	
Congenital malformations	4	1	2	1		
Early infancy	8	4	1	3		
Old Age	4		3	1		
Fractures	57	18	14	6	2	17
Ill defined	1		1			
For medical observation	8	1				7
Unclassified	7	6		1		

ance. Of the 23 placed on the waiting list, 21 sought care elsewhere either in other hospitals, or at home under the care of the Community Health nurse. Several died before the time came for admittance. Those refused because they were medically unsuitable, were incurable cases. The House of the Good Samaritan refuses hopeless heart conditions; and the Robert Brigham Hospital is compelled to limit its quota of incurables.

The classification of these 270 patients, by diagnoses, age and sex appears in Table IX.

STUDY OF PATIENTS ADMITTED TO BOSTON CITY HOSPITAL AND TO THE MASSACHUSETTS GENERAL HOSPITAL FROM JULY 1, 1926 TO JUNE 30, 1927, WHO REMAINED 12 WEEKS OR LONGER

Patients with chronic disease are seldom admitted to the general hospitals unless at the time they are seriously and acutely ill. The hospital social workers in the general hospitals testified, however, that one of their major problems is that of finding suitable places to which to transfer the patients with chronic disease. Similar

Admissions and Refusals At the Hospitals For Chronics Over a Three Months'Period; With Reasons for Refusals.

Hospital	Total no. of Applicants	Admitted	Not admitted					
			No room	Not suitable medically.	Not suitable socially	Placed on Waiting list	Other Disposition Yes	Other Disposition No
Total	270	186	15	10	13	23	21	2
House Good Samaritan	85	49		3	4	18	10	1
Holy Ghost Hospital	77	77						
Robert B. Brigham Hospital	61	19	11	7	9	5	9	1
Long Island Hospital	39	39						
Boston Home for Incurables	4	2					2	
Palmer Memorial Hospital	4		4					

TABLE IX

DISTRIBUTION OF APPLICANTS TO HOSPITALS FOR CHRONIC AND INCURABLE SICK, BY DIAGNOSIS, AGE, AND SEX

Diagnosis	Total No. of Patients		AGE AND SEX																			
			Under 5		5 - 9		10-14		15-19		20-29		30-39		40-49		50-59		60-69		70-79		80&Over	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total	104	166	2	3	12	16	16	6	3	7	5	8	7	14	14	16	13	27	15	37	12	23	5	9
Infantile Par.	2								1		1													
T.B.Spine		1												1										
Other Forms Non Pulmonary T.B.	2	1					1					1							1					
Syphilis	1	2													1	1				1				
Cancer	11	40										1		5	2	5	2	13	4	9	2	5	1	2
Cyst		1														1								
Arthritis	10	24			1	1	1			1	1	2	1	2	3	4	2	6	1	4		4		
Diabetes		1																1						
Encephalitis	2										2													
Tabes Dorsalis	3	1													1		1		1	1				
Cerebral Hemorrhage & Shock	2	19										1				1	1	4		9		4	1	
Other Par.	7	2											2	2	1		1		1		2			
Chorea	7	11			2	4	4	5	1	1										1				
Other Dis. of Nervous System	5	2											3	1	1			1					1	
Dis. of Heart	25	28	1	3	8	11	9		1	4		2	1	2	1	1	1		1	1	2	2		2
Other Dis. of Circulatory System	10	13													2		1		4	6	2	4	1	3
Chr. Bronchitis	1																				1			
Empyema	2																2							
Intestinal Obstruction		1																		1				
Chr. Nephritis	4	5	1					1		1						1			1	1	2	1		1
Dis. of Prostate	1																							
Dis. of Bones & Organs of Locomotion	1	2													1	1						1		
Congenital Malformations		2										1		1										
Old Age	1	2																			1	1		1
Fractures	3	2			1						1						1					1		1
Unclassified	4	6					1								1	1	1	2	1	3				

testimony was given by the hospital superintendents.

To ascertain to what extent beds in hospitals for acute diseases were occupied by patients with chronic diseases over a long period of time, a review was made of patients who remained for twelve weeks or longer at the Boston City Hospital and the Massachusetts General Hospital during the year July 1st, 1926 to June 30th, 1927. Comparative figures for the two hospitals were as follows:

	Boston City Hospital	Mass. General Hospital
Total Patients Admitted to Wards (not including readmissions)	20,895	6,256
Average length of stay of all patients for 1927	13.8 days	18 plus, days
Number and percentage of patients in wards for 12 weeks or longer	292 (1.4%)	85 (1.3%)

The diagnoses of the patients remaining in these hospitals for twelve weeks or longer during the year studied were varied but lend themselves to suggestive groupings:

	Boston City Hospital	Mass. General Hospital	Totals
Fractures	106	23	129
Heart Disease	20	5	25
Genito-Urinary Conditions	15	5	20
Empyema	12	7	19
Carcinoma	9	6	15
Miscellaneous	130	39	169
	292	85	377

Among the miscellaneous were nine patients with chronic nephritis and eight with arthritis at the City Hospital; five with osteomyelitis at the Massachusetts General Hospital; myxedema (2); pemphigus (2) and a great variety of single incidents of prolonged incapacitating disease.

The lengths of stay of those patients who were in the hospitals for twelve weeks or more are indicated in the following table:

	Boston City Hospital	Mass. General Hospital	Total
12-15 weeks	187	53	240
16-20 "	73	19	92
21-31 "	32	8	40
31-35 "	0	4	4
62 "	0	1	1
	292	85	377

At the Massachusetts General Hospital the Director receives a monthly report of all patients having remained in the hospital for more than one month. The 85 patients in this group, therefore, were reviewed each month with the suitability of discharge in mind. Of these 39 were referred to the Social Service Department for discharge to other care; one, who had been in the ward 31 weeks, was still in the ward at the time of the study.

Most of these patients were quite properly in these hospitals during the period of study for diagnosis and the acute phase of the disease, when all the resources of an acute hospital in medical and nursing service were needed.

The fracture group includes many types and considerable range of ages. Of the 129 patients, 17 were under 14 years of age; 26 were from 15 to 29 years; 43, from 30 to 59 years and 43 over 60 years of age. In the figures for the hospital census day, fractures had third place, being outnumbered only by heart disease and cancer. In the summary of all diagnoses of the 4316 patients, fractures were outnumbered by heart disease, organic nervous and mental diseases, cancer, arthritis, arterio-sclerosis and non-pulmonary tuberculosis. In this study, however, the fractures outnumbered all other diagnoses; 36.2% at City Hospital and 34% at Massachusetts General Hospital.

This is not surprising since some of these fracture patients, particularly the younger groups, include many who, after months of care, are restored to normal activity. In the older group are many, such as the fractured hips, leg or spine, who may be permanently incapacitated and who need nursing care as long as they live. Two of the 23 fracture cases at the Massachusetts General Hospital were between 60 and 70 years of age and five were over 70 years. All of these had fractured femurs and needed long time nursing care, probably for the rest of their lives. Any hospital for acute disease is unsuitable for such patients.

The age groups and sexes in percentages for the total group of patients are seen in the following table:

	Boston City Hospital			Massachusetts General Hospital		
	M.	F.	Totals	Totals	M.	F.
14 years and under	19.3%	12.6%	16.8%	18.8%	20.6%	16.6%
15-29 years	20.4%	19.8%	20.2%	18.8%	22.4%	13.9%
30-59 years	38.6%	37.8%	38.3%	40%	34.6%	47.2%
60 years and over	21.7%	29.8%	24.7%	22.3%	22.4%	22.2%

It will be noted in the section on hospital census day, that the Massachusetts General Hospital had on that day, five patients who had been in the wards for over three months and 141 (37%) were reported as needing hospital care for at least three months more. At the City Hospital, 75 of the 843 patients had been in the hospital for three months or more and 200 (23.7%) were reported as needing more than three months of hospital care. It would seem, therefore, that 1.3% and 1.4% of those reported

TABLE X

PATIENTS ADMITTED TO BOSTON CITY HOSPITAL FROM JULY 1, 1926 to June 30, 1927, REMAINING TWELVE WEEKS OR OVER CLASSIFIED BY DIAGNOSIS AND LENGTH OF STAY

Diagnosis	Total No. of Patients remaining 12 weeks or more	Length of Stay: 12 wks	13 wks	14 wks	15 wks	16 wks	17 wks	18 wks	19	20	21	22	23	24	25	26 M	27	28	29	30	31
TOTAL	292	90	48	31	18	22	18	13	11	9	3	6	4	3	2	3	5	3		2	1
Typhoid Fever	3	1			1			1													
Infantile Paralysis	1	1																			
T.B. Spine	3	2	1																		
Other non pulmonary T.B. conditions	2		1												1						
Syphilis	4		1	1		1						1									
Gonorrhea	1			1														1			
Cancer	9	3	3	1	1								1								
Arthritis	8	1		1		2	1	2													
Diabetes	3	1	1	1				1													
Chr. alc.	1																				
Other chr. poisonings	1	1																			
Anemia (pernicious and secondary)	3	2				1															
Other general diseases	7	4	1				1		1								1				
Encephalitis	1																				
Tabes	1		1																		
Cerebral Hemorrhage & shock	7	4				1	1						1								
Gen. Par. of Insane	1													1							
Chorea	2	1			1																
Other diseases of nervous system	3	1		1					1												
Dis. of ear	1	1																			
Heart diseases	20	10	5					1		1		1		1		1					
Arterio Sclerosis & varicose veins	5	2		2	1																
Empyema	12	1	3	1	1	1	1	1			1		1					1			
Asthma	1		1																		
Other dis. of respiratory system	2		1			1															
Hernia and intestinal obstruction	5	4	1																		
Other diseases of intestines	2						1		1												
Cirrhoses of liver	1																				
Chronic Nephritis	9	3	1		2		2										1				
Diseases of prostate	7	2	1	1				1	1						1						
Other non-ven. diseases	7	2	3				1	1													
Diseases of skin and cellular tissue	10	2	2	1	1		3	1													
Diseases of bones	6			2		2					1						1				
Congenital malformations	2												1				1				
Early infancy	3	1			1			1													
Fractures	106	30	15	17	8	10	5	3	4	5	2	2	1			1		1		1	1
Burns	7	1		1			1		1	1							1				
Medical observation	15	6	4		1	1			1	1										1	
Unclassified	10	3	2			2		1	1									1		1	

The figure 1 should appear under sub-division 22, Cirrhoses of Liver.

TABLE XI

292 PATIENTS ADMITTED TO BOSTON CITY HOSPITAL FROM JULY 1, 1926 to JUNE 30, 1927. DISTRIBUTED BY DIAGNOSIS, AGE AND SEX

Diagnosis	Total No. of Patients		A Under 5		A 5 – 9		G 10 – 14		E 15 19		A 20 – 29		N 30 – 39		D 40 –	S 49	E 50 – 59		X 60 – 69		70 – 79		80 & over	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total	181	111	9	6	9	5	17	3	16	6	21	16	15	10	18	15	37	17	27	19	8	13	4	1
Typhoid Fever	1	2		1								1	1											
Infantile Paralysis	1	1					1																	
T.B.Spine	2										1				1					1				
All other forms of non pulmonary T.B.	2														1		1							
Syphilis	1	3										1			1			2						
Gonorrhea	1														1									
Cancer	5	4													1	1	3	1	1	1		1		
Arthritis	6	2							1		3	1		1	1		1					2		
Diabetes	1	2									1								1					
Chr. alc.	1																							
Other chronic poisonings		1												1										
Anemia (Pernicious & secondary)	2	1							1	1							1							
Other gen. diseases	5	2					2		1				1			1		1	1					
Encephalitis	1												1											
Tabes	1																		1					
Cerebral hemorrhage & shock	2	5												1		2	2			2				
Gen. Par. of Insane		1																1						
Chorea		2										1									1			
Other diseases of nervous system	2	1											1		1					1				
Disease of ear		1														1								
Heart disease	12	8	1				2				1	2		2	2	2	2	2	3				1	
Arterio sclerosis & varicose veins	4	1																						
Empyema	9	3	1	1		1			2		2	1	2				2	1	1		1			
Asthma	1																1		1		1			
Other diseases of respiratory systems	2				1						1													
Hernia & intestinal obstruction	3	2	1									1		1	1		1							
Other dis. of intestines	1	1							1			1												
Cirrhoses of liver	1																1							
Chronic nephritis	8	1					1	1	1		2				1		2		1					
Disease of prostate	7																1		4		2			
Other non venereal disease	1	6								1		2				1		1	1	1				
Diseases of skin & cellular tissue	6	4			2		2			2	1	2					1							
Dis. of bones	4	2					1						1	1		1			2					
Congenital malformations	2		1				1																	
Early infancy	2	1	2	1																				
Fractures	65	41	1		5	3	6	1	5	2	6	1	7	2	6	4	16	7	7	12	3	9	3	
Burns	3	4			1			1	1		1			1						1		1		
Under medical observation	10	5	1	1					1		2	1	1		1	1	1	1	3					
Unclassified	6	4	1	2			1		2			1				1	1				1			1

The figure 1 should appear under 5-9 F, classification Chorea.

in this study as staying at the two hospitals, were not true measures of their problem with patients with chronic diseases.

Lack of time prevented checking up with the City Hospital Social Service Department as to what became of this group of patients. It was evident, however, that that Department was under-staffed for the heavy volume of work placed upon it. It is obvious that these patients, most of whom cannot be self supporting, need such help as the Social Service Department can give in plans for after care and follow-up of treatment. In both hospitals the pressure on the Social Service Departments for transfer of patients to chronic care elsewhere is serious.

(To be Continued)

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14311

ENLARGED SPLEEN. SUDDEN DEATH

MEDICAL DEPARTMENT

A Greek cook twenty-seven years old walked into the hospital February 7 complaining of enlarged spleen and epigastric pain. He appeared not particularly ill or suffering any but a slight ache in the splenic area.

Fifteen years before admission while living in Greece he began to have attacks of "fever"—a chilly feeling followed by a hot feeling and some sweating. These attacks occurred nearly every day but not at definite intervals, and were relieved by quinine. For five years he had two such attacks every winter, keeping him from work for three to five days but not in bed. After five years these attacks were succeeded by attacks of a different sort, a chilly feeling lasting five hours, then a hot feeling lasting all night, occurring only once and accompanied by left upper quadrant pain. He felt his enlarged spleen, and by grasping it in his hand could relieve the pain somewhat. The pain was a dull non-radiating aching lasting five to ten days. He stayed away from work only three days. He had had one of these attacks every winter since they began. Twice every winter, not accompanying the enlarged spleen, he had an attack of distention of the abdomen lasting a day relieved by Pluto water. Otherwise he felt strong and well all the year, but better in the summer than in the winter. Ten days before admission he had the cold and hot feeling of his usual attacks, but more intense. The following morning the pain in the left upper quadrant was worse than ever before and there was also pain in a small area just below the umbilicus. The left upper quadrant pain was continuous, the umbilical pain intermittent and aggravated by food. For five days he had had diarrhea. For three days his legs had felt weak. The day of admission his stools were black.

His family and past histories are negative. For five years he had urinated once a month at night.

Clinical examination showed a poorly developed and nourished man resting quietly in bed. The skin showed a diffusely disseminated fine macular purpuric eruption, most intense over the upper eyelids, forehead, scalp, anterior angles of the axillae and over the splenic area. Poor ventilation by the nostrils. Lips dry, cracked. Teeth poor. Pyorrhea. Shotty hard inguinal glands. Lungs clear except for bronchovesicular breathing throughout. Abdomen distended and tense, tympanitic over the epigastrium and above the umbilicus, with slight fullness in the left flank and the left lower ribs. No shifting dullness, but a sensation strongly suggestive of a fluid wave. Spleen very large and tender. Liver enlarged. Slight costovertebral tenderness. Skin of the extremities puffy, but no pitting edema. Both lower legs showed numerous roughly circular slightly depressed areas of dark brown pigmentation and white irregular slightly depressed scars, especially on the dorsum of the feet; one large one on the left outer thigh.

Urine not recorded. Blood: 6,300 leukocytes, 72 per cent. polymorphonuclears, hemoglobin 60 per cent., reds 5,630,000, considerable achromia, some anisocytosis. Wassermann negative. Nonprotein nitrogen 33. Icteric index 10. Stools, guaiac positive in one of two specimens—(the identity of the positive specimen is not certain).

Temperature 99° to 102.4° by rectum. Pulse 99 to 160. Respirations 24 to 38.

The patient was comfortable upon admission to the ward, and when last seen before midnight was apparently sleeping comfortably. Little is known about his course during the night. At seven o'clock the next morning he was reported as having a pulse of 160 with respirations of 40 and as being quite uncomfortable. A few minutes later the pulse was 130, of excellent quality. The heart and lungs were normal. He was slightly pale and had considerable sharp pain in the left upper quadrant which he said had commenced some hours earlier. The splenic area was slightly more tender than it was the night before. Otherwise the abdomen was unchanged. There was no evidence of an acute abdominal condition. There was, however, some distention, apparently from the fluid. He was given a sixth of a grain of morphia with an ice pack to the splenic area. The pain and restlessness were relieved. On his return to the ward after less than fifteen minutes' absence for breakfast there was a marked change. The pulse was rapid and thready and the respirations shallow and fast. There was marked pallor. He lay still with his eyes rolling upward. Ten minutes later without further change he died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

You know probably how common malaria is in Greece and all the countries thereabout. We have at the outset no good reason to doubt that it was malaria and that his spleen was one of the ordinary large so-called "Mediterranean spleens". In the Out-Patient Department when we find a big spleen in the course of the phys-

ical examination we look at the record to see if the patient had lived near the Mediterranean. We used to call it "Armenian spleen", so many Armenians live near the Mediterranean. But we found it in people from other countries too. Armenian spleen is malarial spleen in some cases, perhaps most.

Malarial "fever and chills" is a strange thing to occur in winter. We do not expect mosquitoes to be active at that time.

Relief of pain by grasping the spleen is new to me. It is queer and very interesting.

DR. TRACY B. MALLORY: He gave a very definite story of that.

DR. CABOT: I imagine he squeezed the blood out of it. People do not feel the spleen unless it is pretty big. Typhoid spleen one could feel. I feel pretty sure that it is going to be a fairly large spleen.

It is certainly a very queer kind of malaria.

"The left upper quadrant pain was continuous." That sounds as if it had to do with the stomach. It might be due to pyloric spasm, which is a common source of pain when the disease is altogether outside it.

"His stools were black." That is I think the patient's statement. Patients' statements of the color of stools are not to be relied on. If we knew they were black as a black hat that would be important evidence of hemorrhage high up in the gastro-intestinal tract.

NOTES ON THE PHYSICAL EXAMINATION

"Bronchovesicular breathing throughout" is never true.

"No shifting dullness, but . . . fluid wave." That leaves us in doubt. We cannot be sure of ascites because we feel a fluid wave. It may run through the fat of the abdomen when it is thick, but that is not the case here.

We used to talk about scars like those over the shins as evidence of syphilis. I do not believe anybody says so to-day.

You will remember that at the beginning of this case the patient was apparently not particularly ill. I do not believe anybody expected he was going to die.

"Distention apparently from the fluid." I do not know what fluid that means. We have not heard of fluid before.

DR. MALLORY: He had at this stage a definite fluid wave in the abdomen.

DIFFERENTIAL DIAGNOSIS

DR. CABOT: I may as well say I never saw a case like that. All the interest concentrates in the splenic region. Whatever Dr. Mallory reveals, I feel pretty sure that he will reveal something in which the spleen is the center of interest. We have to say something in which a very sudden event occurred. There are two sudden events that can happen in relation to the spleen.

A STUDENT: Rupture of the spleen?

ANOTHER STUDENT: Infarction?

DR. CABOT: That last is quite possible, but does not usually give such sudden symptoms as this, so I should not say infarction. Rupture with hemorrhage is one of the things we must think of.

A STUDENT: Abscess of the spleen?

DR. CABOT: Yes; ruptured abscess of the spleen. That has happened several times in this hospital, and it seems to me we have to think of it as the other sudden event which could happen in such a case.

I cannot interpret this past history. We might say splenic anemia, Banti's disease. I cannot say it is not that. But he has very little anemia. There is nothing but the qualitative anemia, the low hemoglobin and the achromia with a high red count, which perhaps can be accounted for by poor circulation and cyanosis of the extremities, including the ear. Perhaps he may have more anemia than would show in that single blood count. If so it would be very comfortable to say that this is splenic anemia, Banti's disease, which has reached the stage of cirrhosis and therefore of ascites. Against that is the difficulty of demonstrating any ascites until the very end, when it might perfectly well have been something else, namely blood, hemoperitoneum, or pus, general peritonitis. Banti's disease is such a poorly defined clinical entity that I do not know enough to say whether or not it might have attacks of fever such as he had. I also know too little about kala-azar to say whether this would fit that. I think I have got to leave that out of account and merely say that this is a case of Banti's disease, and that at the end he had a ruptured spleen or ruptured abscess of the spleen. My impression between these two is not at all clear. If we had had him longer we could have told better. He died too soon.

A STUDENT: What was the type of temperature?

DR. CABOT: He was here such a short time that we do not get much help from the temperature chart. The temperature went up very sharply, then came down a bit.

A STUDENT: How do you account for this rash, the pigmented areas on his legs?

DR. CABOT: I do not know how to account for it.

A STUDENT: Why couldn't this be chronic malaria?

DR. CABOT: I never knew a spleen in chronic malaria to come either to abscess or to rupture. If we say abscess we have to account for its getting there, we have to have a focus of infection elsewhere, and there is nothing shown us here.

A STUDENT: When do you think the rupture occurred?

DR. CABOT: Perhaps in the night. He had had pain off and on for a good while, due to stretching of the capsule. I do not think he

had anything but a big spleen before he walked into the hospital.

DR. MALLORY: There was an enormously large spleen, almost down to the pubis, 4 centimeters below the umbilicus.

DR. CABOT: We know it was not a leukemic spleen.

A STUDENT: Why could this not be a case of thrombopenic purpura?

DR. CABOT: I have never known that to cause such a big spleen. The amount of purpura is very slight for that diagnosis, and the history of that would ordinarily be longer.

A STUDENT: Do you consider this was an outcome of the original malaria?

DR. CABOT: I do not now believe that he had malaria. I think his early symptoms are connected with whatever disease he had that enlarged his spleen.

A STUDENT: What else could it have been? He was better after quinine.

DR. CABOT: All sorts of things react to quinine. And there is a difference between being better after it and being better because of it. *Post hoc ergo propter hoc* is poor reasoning.

A STUDENT: Do you think splenectomy could have saved him?

DR. CABOT: Yes, I think it is quite possible that something could have been done for him if he had been seen in the middle of the night when the rupture first occurred.

A STUDENT: What else besides malaria could give a history of fifteen years' illness with a big spleen?

DR. CABOT: I never knew of a case of malaria that came only in the winter and gave such short attacks.

A STUDENT: How long had he been in this country?

DR. MALLORY: I can answer that. He had been in this country fifteen years. He was accustomed to go back to Greece each summer. He was in Greece last summer until the first of November of this year, when he came back to Boston, but the majority of his time had been spent here, and he had attacks of that type here.

A STUDENT: Could it be aleukemic leukemia?

DR. CABOT: That is a very fashionable diagnosis now, but I do not see that we have any good evidence of it.

A STUDENT: Lues?

DR. CABOT: I never knew syphilis to cause rupture or abscess of the spleen. I am betting it is one of those two. Syphilis can enlarge a spleen moderately, but I never knew it to enlarge a spleen to this degree.

A STUDENT: Would you expect an abscess to last five years?

DR. CABOT: No. I do not think it lasted so long. I am inclining against abscess at the present time.

A STUDENT: Was this a spontaneous rupture or did he do it himself?

DR. CABOT: Neither you nor I will ever know that; but I never heard of a man rupturing his own spleen.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Splenomegaly, (cause?)

DR. RICHARD C. CABOT'S DIAGNOSIS

Banti's disease with rupture of the spleen, or Ruptured abscess of the spleen.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Myelogenous leukemia (aleukemic?)

2. *Secondary or terminal lesions.*

Splenomegaly.
Rupture of the spleen.
Hemoperitoneum.
Septicemia, hemolytic streptococcus.
Rheumatic endocarditis, subacute.

DR. MALLORY: This case was a complete mystery and to some extent still is. Here is the spleen, weighing over two kilograms. It had ruptured, and the peritoneal cavity was completely full of fresh blood. Whether it was a spontaneous rupture or whether he ruptured it himself is not absolutely known; but there are two areas of rupture, both at the lower pole, one on the anteromedial surface and one on the posterolateral. They are just about where the fingers and thumb of the right hand would be placed in an effort to grasp the lower pole.

DR. CABOT: He was in the habit of taking hold of that.

DR. MALLORY: Yes. I rather think he ruptured it.

There are a great many other surprising things about the necropsy. The liver was also greatly enlarged, weighing over 3 kilograms and coming 4 centimeters below the costal border. It was a pale yellow, and on section definite white branching marks could be made out, evidently from cellular infiltration along the portal areas.

The heart showed a typical subacute rheumatic endocarditis. The cultures from the spleen showed hemolytic streptococcus, also streptothrix. Whether that means anything or not I do not know, although some one has reported streptothrix as being the cause of the splenomegaly of Egypt. From the vegetations on the heart valve, carefully washed in several dilutions of salt solution and then ground up, a growth of streptococcus viridans was obtained. The blood smear as reported in the record was practically negative. Frankly I do not believe that. The blood in the larger vessels in the various organs of the body was nowhere normal. It contained a great number of white cells, extremely undifferentiated, which makes their failure to react in an oxidaze stain of little significance. I can not find any normal polymorpho-

nuclears, though immature forms are not rare. An occasional myelocyte is seen, eosinophiles are fairly numerous and many normoblasts and megaloblasts are present. On the whole the picture strongly suggests an acute myelogenous leukemia. The spleen and liver show a tremendous interstitial infiltration with leukemic cells, again of the same undifferentiated type; so that certainly the primary disease in this case is a leukemia, and we must assume one of two things. Either the clinical record of the blood count is wrong or else—and I am sure this is not impossible—it is quite correct, but the acute infection with hemolytic streptococcus served to knock down the count in the peripheral blood from a previously very high level to a practically normal one. We have seen several leukemias in this hospital during recent years where in the presence of acute infection the white count dropped suddenly from a very high level to a normal or subnormal level.

DR. CABOT: Not with 72 per cent. polynuclear cells.

DR. MALLORY: I do not believe that differential count.

DR. CABOT: Of course it is possible to have blood smears or blood examiners get mixed up, and that is about as much as we can say in this case. You found very few polynuclear cells in this case?

DR. MALLORY: Only a few immature forms. I think the blood findings were entirely incorrect.

CASE 14312

RECTAL STRICTURE

MEDICAL DEPARTMENT

A married American woman twenty-eight years old was admitted from the Emergency Ward March 16.

Four days before admission she was seized with abdominal pain and vomiting and had a temperature of 105°. Her physician found nothing on physical examination except stricture of the rectum. Her urine contained pus, her feces blood, pus and mucus. The day after the onset her temperature was 104°. The following day she was very irrational, incontinent and thirsty, with abdominal pain, vomiting and much gas. March 15 she had slight cough. On rectal irrigation an obstruction was met at a height of twelve inches. There was pain over the bladder. The cough and vomiting continued. Examination of the lungs was negative. The day of admission the cough was increased. There was pain in the chest, worse in the morning. The pulse was slightly irregular. At admission the temperature was 103°, the pulse 110 and the respirations 32.

She had been a sexual psycopath. A year before admission the anal sphincter was dilated by Dr. Maurice Richardson. Three months before admission it was again dilated by another surgeon. Since that time she had been in the hands of a quack and had gained fifteen pounds.

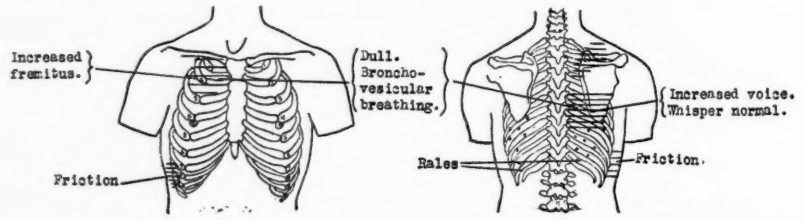
No family history was obtained except that her first husband died of brain trouble, possibly syphilitic.

Clinical examination showed a fairly well developed and nourished woman in low muttering delirium, apparently in some pain, with rather pale skin and mucous membranes and flushed cheeks. Tongue and lips dry. The tongue showed a heavy brown coat. The nostrils moved with respiration. Apex impulse of the heart not seen or felt. No enlargement to percussion. Rhythm regular. Sounds of poor quality. Second sounds weak. Pulmonic second louder than aortic. No murmurs. Pulses of low tension, otherwise normal. Artery walls not felt. Blood pressure not recorded. Lung signs as shown in the diagram. Abdomen prominent, fairly soft, tympanitic, with general tenderness, no masses. Liver and spleen not enlarged. Pupils, knee-jerks and plantar reflexes normal. Rectal examination showed a stricture just inside the anus not admitting the tip of the finger. Pelvic examination not remarkable except for laceration of the perineum.

Amount of urine not recorded, urine cloudy at the single examination, specific gravity 1.012, a trace of albumin, much pus and granular detritus, occasional red blood cells and a few granular casts. Blood normal.

Temperature 103° to 103.3°, pulse 97 to 112, respirations 28 to 36.

The patient became very noisy in the ward and complained of great pain in the chest. The abdomen became much distended. A small rectal tube met an obstruction twelve or thirteen inches up. Material introduced into the rectum returned through the vagina, from which a foul purulent discharge continually oozed. The distention increased in spite of enemas. The mental condition became less clear, the pulse weaker, the breathing more difficult. The morning of March 17 signs of consolidation involving the entire right lung were distinct, and a coarse leathery friction could be felt and heard in the left axilla. Both lungs were full of coarse moist râles. That evening she died.



Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

We have two groups of symptoms here, one abdominal, one thoracic; one which we have every reason to connect with some trouble in the rectum, very possibly a gonorrheal stricture, and one which we naturally think of as a bronchial pneumonia, or perhaps lobar pneumonia.

NOTES ON THE PHYSICAL EXAMINATION

"The nostrils moved with respiration." That is a sign we used to make rather more of in the days when this record was taken than we do now, as significant of pneumonia.

There is nothing to make us accuse the circulatory system.

The lung signs are suggestive of bronchopneumonia, either tuberculous or of some other origin, but they are not completely distinctive signs. No bronchial breathing is mentioned. The whisper is not said to be increased, as one would expect it to be. They are signs which we should like to follow up or know more about before we should feel safe in predicting what they mean.

As we do not know that this is a catheter specimen of urine there is nothing of importance in the sediment.

"Blood normal", if it is taken to include the absence of leukocytosis, is rather surprising.

She was here only a day, so the temperature is not of much importance.

DIFFERENTIAL DIAGNOSIS

I take it she had two troubles, which are independent, one of them pneumonia and the other one a rectal stricture with intestinal obstruction, a rectovaginal fistula and very probably general peritonitis. The source of that stricture would be probably gonorrhea, I suppose. If it has been such as to produce a rectovaginal fistula it certainly might easily have been such as to produce obstruction and so peritonitis. It is true we have none of the marked rigidity of the abdominal wall that is present in the majority of cases of peritonitis. But when people are seriously sick with something else it has turned out a number of times here that general peritonitis can be present without any rigidity of the abdominal wall.

Other than (1) the signs relating to the lower part of the intestine, the vagina and the peritoneum, and (2) those relating to the lungs, we have nothing to point to disease elsewhere. The nervous system, the rest of the gastrointestinal system, the kidneys, the heart, the liver and spleen do not show any evidence of disease. So I believe that she had a chronic disease in the rectum and an acute pneumonia which was the immediate cause of death. I am chiefly doubtful whether there was general peritonitis or not.

Dr. J. Dellinger Barney: Did I understand you to say that you thought that rectal stricture might be due to gonorrhea?

Dr. Cabot: Yes.

Dr. Barney: I never heard of one.

Dr. Cabot: My brother used to say that all the rectal strictures supposedly due to syphilis were really due to gonorrhea, from unnatural practices, which are suggested in this case.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.
Stricture of the rectum (gonorrheal?)
Rectovaginal fistula.

DR. RICHARD C. CABOT'S DIAGNOSIS

Pneumonia.
Gonorrheal stricture of the rectum.
General peritonitis?
Rectovaginal fistula.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Septicemia, pneumococcus.
Lobar pneumonia.

2. *Secondary or terminal lesions.*

Serofibrinous pericarditis.
Chronic ulcerative proctitis with enterorectal and rectovaginal fistulae.
Slight icterus.
Edema piae.

3. *Historical landmarks.*

Chronic perihepatitis, perisplenitis and pelvic peritonitis.
Chronic pleuritis.
Chronic tuberculosis of the mesenteric lymphatic glands.
Chronic hyperplasia of the spleen.
Hypoplasia of the left kidney with compensatory hypertrophy of right kidney.
Fibromata of the uterus.

Dr. Tracy B. Mallory: I am afraid the postmortem findings fail to answer the most interesting questions aroused by the case. She died of lobar pneumonia, of course, in the right upper lobe, as the physical signs suggest. She had a septicemia, pneumococcus, a slight degree of icterus, a pleuritis associated with the pneumonia, and an extension of the pleuritis into the pericardium, with fresh fibrinous pericarditis.

The condition in the rectum is described at great length and seems to have been an ulcerative lesion limited sharply to the rectum, stopping at the begnning of the sigmoid, about twelve to fourteen centimeters in length. Perforation had occurred into the vagina, establishing a fistula there and also through an adhesive loop of ileum, so that a short-circuit had occurred from the small intestine into the rectum

itself. Nothing was found to give any hint as to the etiology of this condition. Very careful search for tubercle bacilli and treponemata was made. Nothing was found, and culture showed nothing of significance.

DR. CABOT: How much of a stricture was there? You describe an ulcerative lesion, but we were thinking more about stricture.

DR. MALLORY: There is nothing in the record to suggest stricture. There was a diffuse fibrous thickening of the wall over the ulcerated area,—apparently nothing else.

HOSPITAL HAPPINESS AND CONTENTMENT

Like so many of the prejudices of a former time, remnants often of a still earlier and cruder mode of psychologic thought, most folk no longer feel a horror of hospitals for mental diseases; and the derangements of mind themselves are well on the way to lose that dread and unreasoning pity in the public regard that they used to have—as if mental illness were in very truth soul-possession by a devil. The absurd feeling of uncanniness mostly has passed away from the concept of insanity.

It is readily learned on careful observation of minds that are really deranged that a very large majority of the patients in a hospital like "Eighty-one" of the Veterans' Bureau, are as happy and as contented as are men in general outside its boundaries. There are, to be sure, a few varieties of psychosis and of neuroris characterized by worry and anxiety, apprehension, who undoubtedly are unhappy, some of them for short periods intensely so, but for the most part even these relatively few cases suffer in their minds only for a few days or a very few weeks at a time, followed by indifference. Some patients, too, are mentally ill in the depressed or down-hearted, grossly self-derogatory way, and these cannot be said to be happy or even contented with their lot. But, on the other hand, few indeed or actually none at all, are the mortals "on the oustide" who have no sort of worry or apprehension. One who loves and thinks must at times worry. Speaking in general terms, however, the anxieties of the normal are far more acute and painful than are those of the mind whose sensitivity has been lessened by disease. And again, the worrisomeness of the environment almost always is worse outside the hospital than within it.

These are the chief of the debit-items in our mental pleasure-pain account of the hospitalized as I see it.

The credit-items certainly sum up a good balance of institutional happiness.

In the first place, there looms up in the hospital-life a basally valuable, nay precious, asset common to all that lives:—the assured indefinite continuance of the creature-comforts of life, each in adequate abundance,—food, fresh air, heat, clothing, sleep, occupation, exercise, companionship, recreation, rest. As experts in the best hospital-construction, in hospital-management, and in the indispensable personal hygiene, physical and mental, the hospital physicians see to it, continuously in the long run, that their patients fully enjoy these and other basal satisfactions. Certainly *these satisfiers make up a large majority of the joy and contentment of our common life* and are, after all is said, our summum bonum, our highest good, for on them rest all possible others. One need only compare the substantial satisfactions as provided to the patients in our hospitals with what of the same kinds our patients would get in their average outside environments, to be completely convinced that the happiness of the hospital life so indicated exceeds, and often greatly, that outside, so far as these primary essentials of our earthly existence are concerned.

Second, numerous patients in the hospital are happy, perhaps continuously, in a degree never equalled by the normal mortal save for short periods of time. These are the manics, the grandiose, etc.

Another hospital credit-item or happiness-factor is the freedom from the many dangers, physical and mental, that beset in the outer world so many of our veterans. Within our gates they are *protected*, and no longer need, with varying success, to strive to guard themselves from the dangers that besiege and frequently embarrass the lives and friends of even normal men outside the hospital reservations of the Government. This happiness-asset holds too in only a lesser degree for the patients' beloved relatives and friends. The patient in hospital knows that in frequent case of need his wife and children will be well cared for through the initiating attention of the hospital's large hearted and ever-searching social service.

Our large general library provides for many patients a never-ending source of happiness and contentment—and right at hand always. God bless the books!

Altogether, it seems reasonable and long since so, to cease commiserating or feeling pity for most of our mentally ill. They do not wish or need our kindly compassion. They need only to be treated as nearly as is possible like more fortunate other men, and be given always every possible chance to be happy.—*G. V. N. Dearborn, M.D., in "Hospitality,"* Official paper of U. S. Veterans' Hospital, 130 West Kingsbridge Road, New York City, September, 1928.

ANOTHER EPIDEMIC OF MENINGITIS COMING

In non-epidemic years the cases of cerebrospinal meningitis which occur develop mainly from epidemic carriers. Under these circumstances bacteriological studies show that the meningococci are apt to represent a considerable variety of types. In contrast to this, during periods, when the disease takes on epidemic characters, most of the cases are caused by one or two fixed types.

For the past five or six years the meningococci associated with the cases occurring in this city have not represented any uniform type, the number of cases has remained low, and there has been no special grouping of cases. This year, however, the marked increase in the prevalence of the disease has been associated with a considerable increase in meningococci of the fixed types, especially Types I and III. It may be that this foretells an epidemic spread of cerebrospinal meningitis for the coming winter.—*Bulletin of the New York City Department of Health.*

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THE BEHAVIOR OF HIGH FREQUENCY CURRENTS

THE employment of medical diathermy on empirical grounds has far exceeded the point to which scientific experiment has given justification for its use. Much of the experimental work on the behavior of high frequency currents has been done with lifeless media or on cadavers. In contrast with such experiments, the work of Carl Binger and Ronald Christie, carried on at the Rockefeller Institute for Medical Research and published in Volume 64 of the Studies from that institution, is of the greatest value. In a series of brief papers, these investigators report the result of their observations on the behavior of high frequency currents both in inanimate media and in the living animal.

By a few simple experiments, they established the facts (1) that the diathermy current will pass through a longer path of low resistance rather than through a shorter and more direct path of higher resistance; (2) that heating occurs first at the periphery, close to the electrodes, rather than at the center; (3) that only by converging the lines of current flow at the center (by decreasing the diameter of the conducting material at that point) can the center be heated to a higher degree than the periphery. They then showed, by the use of thermocouples inserted into the subcutaneous tissue of a dog's chest, that the current does pass through the deeper tissues and does not pass to any important degree by way of the surface of the body. They proved, furthermore, that heating of the deeper parts is greater when diathermy is employed than when heat is applied to the skin, thus showing that conduction of heat is not responsible for the increased temperature of the deep-lying tissues.

A series of experiments was then carried out on narcotized dogs which showed that the passage of 1000 milliamperes of high frequency current through the abdomen or chest for a considerable period (60-90 minutes) would result in an elevation of temperature of 3 or 4 degrees Centigrade; this elevation occurred in the circulating blood (in aorta and vena cava), in the rectum, and in the tissues situated between the electrodes. The temperature of the tissues traversed by the current was not elevated appreciably more than that of the rectum or of the circulating blood, unless the animal were killed or unless the blood supply to that part had been checked. In the experiments on the lungs, Binger and Christie proved that checking the respiration of one lung did not affect its response to diathermy, whereas constriction of the pulmonary artery on that side was followed by a marked rise of temperature in the lung. The fact that the heat which developed in the lung was carried off by the circulating blood was further proved by the observation that the temperature of the blood in the left ventricle, which is normally lower than that of blood in the right ventricle, was higher after diathermy had been applied to the lung.

These experiments of Binger and Christie are beautiful examples of scientific logic and control. They prove certain facts which should have been proved long ago. Yet, excellent though they are, they cannot answer to our complete satisfaction all the questions which arise in connection with so complicated a problem. As the authors state; "arguments from analogy based on such *in vitro* experiments have been carried over to the clinical application of diathermy, and have been responsible for many false assumptions. The living body is not a sausage, nor yet a tube filled with albumin water. It is a heterogeneous system composed of tissues with different specific conductivities and heat capacities. Moreover, these tissues are variously placed and must therefore lose heat at different rates, according to the efficiency of their circulation, and the opportunity afforded them for heat loss by radiation, convection, and conduction." Binger and Christie have attempted to establish only a few fundamental facts connected with diathermy. This they have done admirably.

They have given us no idea as to the practical value of this method of treatment. One may

assume that, even though the temperature of the deeper tissues is not greatly elevated, the circulation of blood through the parts so treated is greatly increased in order to carry off the heat generated by the current. May not this local hyperemia be of great value in the processes of repair?

At least, thanks to the investigators, we know that the current does pass through the deeper tissues and that the heat so generated is carried off by the blood. It is to be hoped that further studies may be carried on in the laboratory, yet the final estimate of the value of this form of treatment rests with the clinician; let him read the work of such men as Binger and Christie, and in the interpretation of his results be guided by the same spirit of criticism and scientific judgment.

IS THERE A POSTVACCINAL ENCEPHALITIS?

ATTENTION has been directed from time to time, in the columns of this JOURNAL, to the prevalence of various infectious diseases of the central nervous system. In the issue of August 2nd, 1928, there appeared an editorial on one of these diseases, poliomyelitis, and a week later, Fremont-Smith[1] called attention to the changes in the spinal fluid occurring in meningitis, as well as its importance in the differential diagnosis of poliomyelitis, meningitis, tuberculous meningitis, brain abscess and encephalitis lethargica.

In the general literature, moreover, one finds many references to these infectious diseases. The *Quarterly Cumulative Index Medicus* requires five closely printed columns to list the papers on epidemic encephalitis appearing in 1927; the various forms of meningitis necessitate nearly as much room. The literature is, therefore, vast and continually increasing. It is also interesting to note that there has been a change, in the last few years, in the subjects discussed; new syndromes, more clear-cut pathological pictures and even new diseases appear. Recently, at least one variety of encephalitis has been more thoroughly studied than ever before and we now have the results of investigations by pathologists who believe that the postvaccinal form of encephalitis has certain characteristic features which serve to differentiate it from other types of central nervous system infection.

A report[2] from Great Britain of considerable importance, published this spring, on encephalitis occurring in persons who had previously been vaccinated served to call attention anew to this disease. Perdrau examined the histological lesions in three fatal cases: one, aged 6, with the onset of nervous complications 12 days after a normal vaccination and death 4 days later; a second, aged 19, with the onset 9 days after normal vaccination and death 14 days later; and a third case, aged 15, with the onset of symptoms 7 days after normal vaccination and death 4 months later. In one case the disease was almost fulminating and in another it only lasted two weeks before death. The character of the lesions is that of a meningo-encephalo-myelitis of varying severity and distribution; not unlike the general pathological appearance of other types of encephalitis. It is characterized histologically, however, according to Perdrau, by areas of demyelination around certain blood vessels similar to the extra-adventitial infiltration or "softening" referred to in an earlier paper by Turnbull and McIntosh.[3] The appearance of these areas, from which the myelin has been removed, is similar to that found in disseminated sclerosis, although the lesions are much more closely confined to the vicinity of blood vessels and are, therefore, not so bizarrely "disseminated" as in the latter disease. The exact character of the lesion has been discussed in some detail recently in a series of letters in the *Lancet*.[4]

All three investigators believe that the pathological histology of the postvaccinal cases is different from that of epidemic encephalitis. Perdrau, however, does not limit the type of lesion he has found to postvaccinal encephalitis alone, but considers that a similar histological picture may be found in cases of nervous disorders complicating smallpox, measles and other fevers, as well as those occurring in the course of antirabic inoculations.

Whatever may be the outcome of this discussion, it would seem that we are still far from having a definite pathological picture of this disease. All we can say, at present, is that there has been described in Europe, chiefly in Great Britain and Holland, a clinical syndrome of nervous symptoms, with possibly distinct characteristic pathological features of encephalitis following vaccination. Turnbull and McIntosh agree with Perdrau that the pathology of the postvaccinal cases is different from that found in poliomyelitis and in encephalitis and that probably the disease has a distinct pathology of its own.

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3 Turnbull, H. M., and McIntosh, J.: Encephalo-Myelitis Following Vaccination. Brit. Jour. Exper. Path., 1926, VII, 181.
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ECONOMIC STUDIES RELATNG TO CANCER DEATHS

DR. LOUIS I. DUBLIN is quoted in the Campaign notes of the American Society for the Control of Cancer to the effect that between the ages of 25 and 35 years there are about three thousand deaths each year and between 35 and 45 the figures mount to nearly ten thousand.

The deaths of those under 25 are regarded

as a financial loss to the nation of thirty-eight million dollars, of the group between 25 and 35 sixty-two million dollars, between 35 and 45 one hundred and sixty million dollars, between 45 and those above 55 the total amounts to six hundred and eighty million dollars based on the statistics of 1927.

In addition to this tremendous loss based on the value of human life the most distressing feature of this disease is to be found in the long period of illness and suffering. The additional loss due to the cost of the prolonged illness is more than can be calculated on available evidence. Dr. Dublin believes that the cost of medicine and nursing is at the least about one thousand dollars and there are more than one hundred thousand cancer deaths per year. Many other items enter into this calculation of which the loss of wages in the working period is very large. Dr. Dublin believes that we lack the spirit of enterprise and of initiative; but nevertheless something is being accomplished. Already launched are organized efforts like the war which is being led by the American Society for the Control of Cancer. That is helping by waking people up and telling them the facts. We also have research agencies which work in medical centers for the study of cancer.

But the combined efforts of the world to conquer cancer are only a drop in the bucket; we are playing with toys when we should be using engines of a thousand horsepower.

The public does not realize the economic consequences of the cancer situation and the enormous loss which it entails. There are few sources of loss to the community greater than that caused by this disease, and we must be prepared to spend liberally in money, time and energy to solve the problem of its control. It can be done, but it will take time and money and the concentrated energy of the community.

We have not properly realized how serious this all is. We must organize our agencies of research and our armies for the practical application of our knowledge on a grand scale. Then the monster of cancer will surely in time be brought under control, just as the menace of other diseases has been. Therein lies our hope and our faith.

ANOTHER CANCER CLINIC REPORT

We are again able to give publicity to one department of the work under way in dealing with cancer in Massachusetts.

The report of the Springfield clinic on page 585 is interesting from several angles. First because of the evidence of sustained interest by those in charge, second that so many cases appeared for examination, and third that newspaper publicity was the most effective agency in leading persons to report for examination.

It seems strange that physicians are not credited with much influence in persuading more of their 264 patients to apply for advice although praise is given for co-öperation on the part of the profession. The co-öperation was probably very largely with the Springfield doctors.

It may be that doctors are not at all remiss for many cases of cancer are referred directly to hospitals or experts for treatment or advice without passing through a public clinic. Since most of those applying at the clinic came because of newspaper or other forms of publicity perhaps most of these patients did not seek the advice of the family physician. Cancer patients often avoid the usual medical attendant.

The testimony that cancer phobia is diminishing is especially encouraging and tends to refute a common argument which has been employed in criticism of the State program. All interested in the State cancer program may take courage from the reports which have been submitted from the clinics.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MARVIN, H. M. A.B., Davidson College (North Carolina) 1914. M.D., Harvard Medical School, 1918. District Physician, Near East Relief, Alexandropol, Armenia, 1919-20; Assistant in Medicine, H.M.S. and Asst. in Medicine, M.G.H., 1920-21; Instructor in Medicine, Yale University School of Medicine, 1921-23; Asst. Professor Medicine ibid, 1923-28; Guggenheim Fellow with Sir Thomas Lewis, University College Hospital Medical School, London 1926-27; now Asst. Professor Clinical Medicine, Yale University School of Medicine. His subject is: "The Heart During Anesthesia and Operative Procedures". Page 547. Address: New Haven Hospital, New Haven, Conn.

HILL, T. CHITTENDEN. Ph.B., M.D. University of Vermont Medical College 1895, F.A.C.S.; Ex-President, American Proctologic Society; Consultant, Rectal Department Boston Dispensary. Address: 315 Marlboro Street, Boston. Associated with him is:

HAYDEN, EDWIN PARKER. A.B., M.D. Columbia University College of Physicians and Surgeons 1919; F.A.C.S.; Assistant in Surgery, Harvard Medical School; Assistant Surgeon Out-Patient Department, Massachusetts General Hospital; Surgeon to Out-Patients, Huntington Memorial Hospital. Their subject is: "Chronic Constipation Due to Congenital Stenosis of the Anal Canal". Page 552. Address: 270 Commonwealth Avenue, Boston.

SOWLES, HORACE K. A.B., M.D. Harvard 1915. F.A.C.S. Assistant Surgeon, Beth Israel Hospital; Surgeon, Massachusetts General Hospital, Out-Patient Department; Assistant Surgeon, Faulkner Hospital; Consulting Surgeon, Lawrence Memorial Hospital, Medford; Assist-

ant in Surgery, Harvard Medical School. His subject is: "Traumatic Abscess of the Omentum". Page 554. Address: 279 Clarendon Street, Boston, Mass.

FORBES, ALEXANDER. A.B., A.M., M.D. Harvard 1910. Associate Professor of Physiology, Harvard Medical School; Treasurer of the American Physiological Society; Member American Academy of Arts and Sciences; American Association for the Advancement of Science; Boston Society Medical Science; Boston Society Natural History. His subject is: "A Note Concerning the Effect on Their Function of Stretching Nerve Trunks". Page 555. Address: 240 Longwood Avenue, Boston.

THE BOSTON MEDICAL LIBRARY

ARTHRITIS

IF one were to seek out the subject in medicine about which there had been the greatest amount of ill considered writing, faulty reasoning and inaccurate observation it is doubtful if any would illustrate it better than the subject of arthritis. It is equally doubtful if there is any condition that deserves more careful study. It ranks right along with cancer and tuberculosis, not for its lethal possibilities of course, but in its power to incapacitate and place its victims in a position of economic dependency, to a greater or lesser extent. Just because it has not exacted a high mortality it has long been looked upon as one of the infirmities we must bear, with as much complacency as possible, and be thankful it is no worse. For the well-to-do it provides an excuse for travel in search of the Spa that will supply some modicum of relief. For the indigent it has created the Alms House with the adopted motto: "Abandon all hope ye who enter here." The Public, knowing no more about it than the Doctors but assuming with them that it was beyond the pale of relief, as cheerfully as might be, footed the hills for carrying the burden and hoped that they themselves might be spared. The profession having more interesting and urgent problems to contend with, could develop no concern about a disease that took so much time to bring about so few results that were at all favorable and became reconciled to let this class of case drift along as best it might and often encouraged those who consulted them to patronize any charlatan who professed to have a panacea for its cure. A generation ago scarcely any doctor to whom such a patient applied for help thought of giving him the benefit of a physical examination. Treatment would be based entirely upon the patient's complaints and consisted of that form of salicylate of which the physician had the most samples, or the iodide of potassium or both. A few there were who, capitalizing their own and the public's ignorance, set themselves up as specialists and either starved or purged their victims into a state where they had something else to think about than their joints, though doubtless in a few cases they did some real good. During this period knowledge about bacteria was gradually accumulating and naturally it was discovered that the behavior of certain joint manifestations had something in common with the reactions of bacteria in other localities or organs and the purely empiric treatment with drugs, diets and baths gave way to the opsonic index and the autogenous vaccine. Pathologists, about this same time, were in some way inspired to take a hand in the study of arthritic lesions and, based largely upon their findings, the knowledge of arthritis as reflected in the complicated classifications of the disease, served, for a time at least, to befog the situation even more. As an interest in slow-moving, chronic conditions began to find some converts among a certain class of practitioners, these patients were given more consideration clinically and in public services connected with large hospitals where considerable groups of cases could be studied carefully a beginning was made which has led to a greater interest in this class of patients. Were it possible to visualize in some way the efforts of that portion of the medical profession who are especially interested in the study of arthritis it would not appear unlike an airplane picture of a farmer driving a flock of sheep. Every now and then some individual sheep or investigator, as the case may be, goes off on a tangent and has to be brought back into line, to the hindrance of the forward progress of the flock, and, more often than not, without benefit to the cause. After the opsonic index tangent had been forgotten the "focal infection" one came on the scene and its true worth has not as yet been assessed.

It could hardly be expected that the endocrine glands would be exempted from responsibility for arthritis and certain observers have thought they saw reason for treating arthritis by glandular extracts. These are a few of the "tangents" on which men have gone off, looking for a solution of the perplexing problems presented by patients with arthritic lesions. They by no means represent the vagaries in which the profession has indulged in seeking for clues to guide them in treatment nor by way of trying out purely empiric methods. To even enumerate these would take us too far afield. As has been intimated, pathologic investigations alone, supplied no clue, for the very obvious reason that much of the material used for this purpose was terminal pathology, from which no one ought to have expected any help. Clinical observations are the only logical sources of information and even here opportunity to observe these patients in the early stages of their trouble is denied because the public is not yet educated up to the fact that possibly something might be done for these patients if the old notion that

arthritis is a misfortune to be expected and endured, could be dispelled. After these thirty years or more, during which time there has been going on a considerable amount of investigation along arthritic lines, there has been reached a fairly unanimous conclusion that all cases of this disease may be reduced to two main groups. One contains the cases in which toxic (bacteriologic) influences are at work and the other those in which metabolic (chemical) disturbances are predominant. Viewed in this light failure to classify in one or the other groups, if all known methods of investigation are employed, will be extremely rare. These methods are, in the order of their importance, a searching clinical history, including the course of the development of the symptoms in the given case; the nature of the physical signs; the pathology as reflected in X-ray and other purely pathologic examinations, including biopsy if necessary, and behavior under treatment. Roughly speaking the toxic case, aside from its strictly arthritic symptoms, is sick, i.e. it has constitutional toxic symptoms of an unmistakable type. By the same token the metabolic arthritic is not sick, with the one exception of the gouty subject. Looked at from the standpoint of physical signs, clinical cause, concomitant symptoms and pathologic findings the same thing holds true i.e. the toxic arthritic runs true to form so far as the phenomena of infection is concerned whereas the metabolic arthritic does not. The exceptions to these generalizations are few and may often be explained. The development of the present conception of arthritis, though not by any means strictly in accord with the above statement, may be seen from a study of the literature. To this end the Library will endeavor, during the fortnight beginning September 24th, to present some of this literature in Holmes Hall.

MISCELLANY

ANNUAL REPORT OF SPRINGFIELD CANCER CLINIC

MARCH 1, 1927—MARCH 1, 1928

Number of clinics	52
" examined	265
Diagnosed as Cancer	47
" " Benign Tumors	36
" " Malignant Tumors	2
" " Other Ailments	186
Number of return examinations	25
" who had operations	26
" " received Radium treatment	19
" " " X-ray treatment	7
Admitted to local hospitals	21
" " hospital in Montreal	2
" " Pondville Hospital	5
" " Holyoke Hospital	1
Inoperable cases deceased	7
Home visits	252
Telephone calls	69
Newspaper articles	154
Letters written	129

Total expense for the twelve months:	
Nurse's salary	$900.00
Carfares	25.92
Telephone	2.81
Postage & papers	11.47
Office & Clinic supplies	5.25
Nurse's expenses to Pondville Conference	7.39
Total	$952.84

At Springfield Hospital	17 clinics	115 examinations
At Mercy Hospital	17 clinics	65 examinations
At Wesson Memorial Hospital	18 clinics	85 examinations
Total	52 clinics	265 examinations

The Springfield cancer clinics were organized March 1, 1927, under the joint sponsorship of the Massachusetts Department of Public Health, the Springfield Cancer Committee and the three Springfield hospitals. The local committee is composed of a group of medical men representing the hospitals and a group of lay people selected from the officers of the Visiting Nurse's Association, the Tuberculosis Association, the Springfield Federation of Women's Clubs and the industries.

The three hospitals in which the clinics are held are the Wesson Memorial, the Mercy and the Springfield. The heads of the surgical staffs in the respective hospitals have assumed responsibility for the assignment of clinicians all of whom have been of high rank and outstanding calibre. The spirit of co-öperation among the members of the medical profession and in the hospitals has been noteworthy.

From March 1927 to March 1928 fifty-two cancer clinics have been held in Springfield and 265 patients examined. Not all of them by any means came from Springfield and its immediate environs because during the first year of their operation Springfield clinics received patients from all over Western Massachusetts and in a few instances from neighboring towns in Eastern Connecticut and Southern Vermont. Of the 265 examined 47 were diagnosed as cancer, 2 as malignant tumors and 36 as benign tumors. The others showed no symptoms of anything pertaining to cancer but they came in stimulated by the educational publicity on account of something which they thought might be or might lead to cancer.

By far the greater number of persons who have attended the clinics have done so chiefly on account of the persistent notices printed in the newspapers. Few have attended through any particular interest shown by public health or welfare workers, or by the medical profession itself. Many who attended, attended with the sole purpose of getting a confirmation of a previous diagnosis, chronic cases who were willing to go anywhere or turn in any direction for another ray of hope. There have been a considerable number, too, who really have had cancer but did not know it until a diagnosis was made at the clinics.

Co-öperation in disseminating educational publicity through clubs, societies, boards of health and newspapers, especially newspapers, has been wonderful. Had it not been for the newspapers there is very serious doubt as to whether the Springfield clinics could have even been worth holding.

The most encouraging feature of the clinics to date is the fact that they began to receive, soon after they were opened many, many patients who either had cancer in the early stages or no signs of cancer at

all which leads one to believe that the educational publicity connected with the campaign is beginning to dispel the phobia that has always made cancer sufferers shun medical attention until it was too late to be helpful.

RINGWORM OF THE HANDS AND FEET

Recently it has been pointed out by Surgeon General H. S. Cumming, of the United States Public Health Service, that within the past few years throughout the whole United States many persons have been affected with an eruption of the hands and feet that is most marked during the hot weather. Information is slowly spreading among the public that in many instances this trouble is due to infection with a ringworm parasite. Medical knowledge of ringworm of the hands and feet is comparatively recent.

The disease is remarkably frequent, and it is probable that at least one-half of all adults suffer from it at some time. In the University of Pennsylvania a careful survey of all students showed that over 60 per cent. were affected with the ringworm organism. This work was definitely proven and not mere clinical diagnosis, for organisms were found in all cases. It is met with in every part of the country and is more frequent in the South than in the drier and colder climates.

It is said that in the Gulf States practically the entire population has had the disease at some period.

Almost everyone who uses a swimming pool, a golf club, an athletic club or any place where there is a common dressing room has the infection upon his feet. It is highly probable that the development of club life, the great increase in the number of swimming pools, and probably the general tendency of the American public to spend a certain amount of time in hotels, is largely responsible for the increase in this disease.

Ringworm of the hands and feet is caused by a vegetable parasite which is a distant cousin of the well-known mould that grows upon stale bread. In addition to living upon the human body it can probably live and grow elsewhere, and can resist drying for a long time. In fact, it is a remarkably resistant organism for it takes at least fifteen minutes of boiling to kill one. There are a number of varieties of ringworm parasite and it is highly probable that some are much more difficult to cure than are others. Unfortunately, at the present time, more exact knowledge on this point is needed.

Any type of person can be affected, whether well or ill. Food has nothing to do with the disease. Even the much talked of acidosis can hardly be credited to be the cause. The disease is much more prevalent during heated spells. Any occupation that entails long continued heating of the feet may be a predisposing cause or may aggravate an attack. Hot floors are bad. Feet should not be kept upon a radiator.

The disease is usually acquired by walking barefooted where the unshod have trod. Bath mats are justly blamed, and it is probable that ringworm can be acquired from them just as warts upon the soles of the feet can be. As already mentioned, common dressing rooms are probably the most frequent places where the disease is picked up. However, it can also originate in hotels and from the use of infected towels or soap. There is no good proof that the water in swimming pools is in any way responsible.

In many instances either feet or hands alone are affected, but in the majority of instances traces of the condition can be found upon both. In its mildest form the disease exists as either a little cracking or a little scaling between the toes. In many instances the so-called soft corn is really due entirely to infection with ringworm parasites. Other common types of lesion are those in which there are either few or many blisters, a diffuse scaly eruption and, lastly, wart-like growths. Any portion of the hands or feet may show one of these eruptions. Rarely they may extend as high as the elbows or knees. When the blisters break, fluid always escapes to the surface and there is a wet oozing surface that usually becomes covered with scabs. Itching is frequently intense.

In a few cases a pus infection occurs and rarely abscesses may develop. These may be upon the hands or the feet or in the lymphatic glands which drain the involved areas. This is the condition sometimes known as "blood poisoning". Fortunately, it is rarely serious.

In many people the disease is by no means a mild one. Out of 161 consecutive cases it was found that 14 were totally disabled and 32 partially disabled. In some instances this disability lasted as long as three months.

In certain cases the body gains some resistance against ringworm organisms, just as it does against many other infectious diseases. However, one attack does not aid in guarding against subsequent ones. It should always be remembered that the ringworm organisms exist deep down in the skin, and this, of course, is the reason why they are so difficult to kill.

A few other conditions may resemble ringworm infection. Yeast may grow between the fingers or toes and give rise to lesions that closely resemble those caused by ringworm. The blisters of poison ivy may have a superficial resemblance. It is often alleged that poison ivy recurs each year upon the hands of some individuals, but in many instances the trouble is due to a ringworm infection. Many persons know that the handling of the house primrose plant is frequently followed by an eruption of blisters upon the fingers, and more rarely, the hands, wrists and even the face. This condition too has been mistaken for ringworm. In fact, almost any type of chemical or mechanical irritation may be responsible for skin troubles that closely resemble those caused by ringworm.

The disease never invades the scalp, and it is excessively rare upon either the face or body. Almost all cases can be temporarily cleaned up, and apparently about 50 per cent. can really be cured. Because of the great frequency of the disease it is difficult to tell whether a fresh outbreak is due to a recurrence or to a new infection.

An individual affected with ringworm should not use a bath mat. It is much wiser to step upon a section of newspaper and to burn that. Likewise the affected person should be most scrupulous about having his own towels and soap, and his socks, slippers and shoes should be worn by no one else. The use of light canvas slippers in dressing rooms would probably result in a marked decrease in the frequency of the disease. The floors of these dressing rooms should be washed and frequently treated with antiseptic solutions. A person in the active stage of ringworm should certainly sleep alone. Likewise, in the presence of lesions upon the hands, he should

not dance, drive a car unless with gloves, hold to car straps or touch any object which others might also touch. It is possible that doorknobs may convey the infection much more frequently than we know.

There is no type of serum which has the slightest effect upon the condition. A person suffering from the disease should soak the affected parts in salt solution at least once a day. This, it will be remembered, is a common type of treatment for infections in all hospitals. Practically every known type of antiseptic has been employed but no one has met with universal commendation. Almost every physician has his own favorite method of treatment. Very light doses of the X-ray frequently exert a most beneficent influence, but they do not prevent the disease from returning. It has frequently been noted that those going to the seashore and exposing themselves to the sun and salt water often recover in a short space of time. This observation has led to the use of ultra-violet light, and, under medical supervision, this remedy is often of great aid. Care must be taken that a marked burn is not produced. Of course, infected stockings, slippers or gloves must never be worn.—*United States Public Health Service.*

COST OF SICKNESS

Estimates have been made by Homer Folks, vice-chairman of the Public Health Council of New York State, that the capital loss to the people of the United States through sickness amounts to $31.08 per person or $134.68 per family. He estimates that the total earning power of the nation is diminished by $15,000,000,000. About 94 per cent. of the cost falls on the sick or their families, the remaining 6 per cent. being distributed as a community expense.

PITTSFIELD KIWANIS CLUB HEALTH CAMP

The Kiwanis Health Camp recently closed after a most successful season. A summary of the summer's accomplishments shows that there were 1989 child days with an average attendance of 39. The total number of pounds gained was 143 with an average gain of 3½ pounds. The maximum gain by one child was 8 pounds.

In selecting the children for the camp which opened on July 5, those were chosen who had been exposed to tuberculosis, who had positive tuberculosis tests or who were markedly underweight. All were girls.

GORGAS LABORATORY TO BE STARTED

Dr. Franklin H. Martin and Colonel Joseph F. Siler have recently returned from Panama, where the use of a building has been granted by President Chiari until the laboratory shall be started by the Panama Government. A search is now being made for the right man to head the Gorgas Memorial Institute.

SPOTTED FEVER DEATHS CHECKED BY VACCINE

The vaccine for Rocky Mountain spotted fever, discovered three years ago at the United States Public Health Service Laboratory at Hamilton, Mont., is believed to have proven an efficient protection against the disease, it was stated orally by Dr. R. C. Williams of the Public Health Service, September 12.

Surgeon General H. S. Cumming, of the Public Health Service, who has just returned from an inspection trip to the Rocky Mountain and Pacific Coast States, visited the laboratory at Hamilton in connection with the studies being conducted with the disease, Dr. Williams said. It was discovered, he said, that out of 1,500 cases vaccinated during the past year only one died of the fever, while ordinarily the mortality rate is 90 per cent. The State of Montana, he said, appropriated $20,000 for construction of the laboratory used by the Public Health Service.

While in the West, General Cumming attended the joint meeting of the State health officers and the State medical societies of the Rocky Mountain States, in Yellowstone Park, Dr. Williams said. He also inspected the quarantine stations in Seattle and San Francisco and made a study of the maritime quarantine procedure now in effect.—*United States Daily.*

CORRESPONDENCE

PAY UNDER STATE MEDICINE

242 Burncoat Street, Worcester, Mass.,
September 10, 1928.

Editors, THE NEW ENGLAND JOURNAL OF MEDICINE:

Under a system of State Medicine with such an organization as the Bureau of Medicine and Surgery of the United States Navy with the same pay schedule, our profession as a whole would have nothing to lose in its net earned income.

In 1898 a graduate of a leading medical school, a large general general hospital, and a lying-in hospital entered the medical corps of our navy. In 1917 before the war, having been assigned to duty in the metropolis where he had studied and trained for his profession, he renewed his friendships among his former associates, who had attained prominence in the hospitals and in the medical schools. He found that, though he had been dependent wholly upon his salary and was by nature as generous and charitable as they, he was just as well off as they financially. Why? Because he enjoyed a steady net income with no business expenses, required no health and accident insurance, the minimum life insurance, and no fund for his days of retirement.

Yours truly,
G. W. HAIGH.

P. S. I hope you can publish this letter in refutation to part of Dr. Fishbein's argument against "Socialized Medicine." G. W. H.

RECENT DEATHS

DR. ALBERT C. THOMAS

The death of Dr. Albert C. Thomas, superintendent of the Foxboro State Hospital, has taken from the public service of our State a very able executive and a truly great friend and benefactor of the mentally sick. He was born in 1875 and graduated from the Baltimore Medical College in 1898. Dr. Thomas was appointed fifteen years ago superintendent of the newly established State hospital for the insane at Foxboro. It was his task to inaugurate the system, and to shape the policy of the new institution.

It was the writer's privilege, as a trustee of that institution, to observe at close range Dr. Thomas's whole career at Foxboro, and I feel it may be said, without fear of contradiction, that he was both in heart and mind, and in exceptional professional abil-

ity, as fine a type of public servant as this Commonwealth has ever had.

In personal characteristics he had all the charm of the chivalrous Southerner that he was, with a delightful faculty of setting everybody at ease, even when engaged in the most exacting duties.

The patients appeared always to regard him as a real friend, and they looked to him with great confidence for relief in their mental perplexities.

Dr. Thomas kept abreast of the most recent scientific theories and discoveries relating to the care and cure of insanity, and he organized a staff of the very highest order, embracing as it does today experts from European as well as from other American institutions.

In addition to his thoroughgoing devotion to the institution over which he presided Dr. Thomas found time to promote the interests of the town of Foxboro, especially in a medical way.

THOMAS J. SCANLAN, M.D.
—Boston Transcript.

HODGDON—DR. ANDREW HALL HODGDON, for 38 years medical examiner of the first Norfolk district, died at his home in Dedham, of heart disease, after an illness of about two weeks, September 13, 1928, aged 70.

The son of Richard Lord Hodgdon, a Fellow of the Massachusetts Medical Society in Arlington, who died in 1893, he was born in that town, October 27, 1857. He was graduated from Harvard in 1879 and Harvard Medical School in 1883, joining the State Medical Society in 1882.

He was appointed medical examiner in 1890 and reappointed to successive terms since. He was a member of the Dedham School Committee for 25 years, chairman of the board most of that time. He was a library trustee, was president of the Dedham Institution for Savings, and a director in the Dedham National Bank and the Norfolk Mutual Fire Insurance Company. He was a member of Constellation Lodge of Masons.

He is survived by his widow, three sons, Waldo C. of Westwood, Andrew Y. of Dedham and Harold of Hingham, and a daughter, Mrs. Knight Rolfe of Dedham.

PACKARD—DR. GEORGE HENRY PACKARD, a Fellow of the Massachusetts Medical Society, and of the Medical Society of North Carolina, died at the Peter Bent Brigham Hospital, Boston, September 10, 1928, aged 64.

A graduate of the College of Physicians and Surgeons, Baltimore, in 1898, he settled in Medford, Mass., the next year and joined the State Society. Of late years he had been retired and made his residence in Meredith, N. H.

BIRMINGHAM—DR. LEWIS HOWLAND BIRMINGHAM, a graduate of Tufts College Medical School in 1897 and a former resident of Boston, died at Springfield, Massachusetts, September 9, 1928.

NEWS ITEMS

APPOINTMENT OF JOHN D. CAMP, M.D.—Dr. John D. Camp of Boston has been appointed Associate Roentgenologist to the Mayo Clinic at Rochester, Minnesota. He will assume his new duties on October first.

CHANGES OF DUTIES AND STATIONS OF COMMISSIONED AND OTHER OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE TO SERVICE IN NEW ENGLAND

Assistant Surgeon General Thomas Parran, Jr. Directed to proceed from Washington, D. C., to Boston and Norton, Mass., and return for conference with State health officials in Boston, and to address a meeting of the Massachusetts Conference of Social Work to be held at Norton on Sept. 14, 1928. Aug. 24, 1928.

Acting Assistant Surgeon F. C. Makepeace. Directed to proceed from New York City to Hartford, Conn., and return, in connection with field investigations of industrial hygiene. Aug. 25, 1928.

CHANGE OF LOCATION OF DR. EDWARD L. MERRITT—Dr. E. L. Merritt has resigned from the Truesdale Hospital and Clinic and has opened an office at 130 Rock Street, Fall River.

REPORTS AND NOTICES OF MEETINGS

MINNEAPOLIS MEETING OF THE WOMEN'S NATIONAL AUXILIARY

The sixth annual session of the Woman's Auxiliary to the American Medical Association was held in Minneapolis, Minnesota, June 11-15, 1928. Over 1,200 women registered and they were delightfully entertained and cared for by the local Auxiliaries.

The business meetings were largely attended, 400 women being present at the all-day session of June 14. Much interest was given to the reading of the papers and State reports. There are now well organized and efficient units in 30 States.

The abstracted proceedings will be printed at an early date and a copy sent to the entire membership.

The following officers were elected:

President: Mrs. Allen H. Bunce, 360 Ponce De Leon Avenue, N. E., Atlanta, Georgia.

President-elect: Mrs. George H. Hoxie, 3719 Pennsylvania Avenue, Kansas City, Missouri.

First Vice-President: Mrs. Evarts V. De Pew, 115 East Agarita Avenue, San Antonio, Texas.

Second Vice-President: Mrs. David W. Parker, 52 Clark Street, Manchester, New Hampshire.

Third Vice-President: Mrs. Horace Newhart, 212 West 22nd Street, Minneapolis, Minnesota.

Fourth Vice-President: Mrs. Frank W. Cregor, 1621 North Meridian Street, Indianapolis, Indiana.

Treasurer: Mrs. Irvin Abell, 1433 South Third Street, Louisville, Kentucky.

Secretary: Mrs. M. T. Edgerton, 788 Penn Avenue, Atlanta, Georgia.

Parliamentarian: Mrs. F. L. Adair, 2500 Blaisdell Avenue, Minneapolis, Minnesota.

Directors for two years: Mrs. John O. McReynolds, Dallas, Texas; Mrs. William Wayne Babcock, Philadelphia, Pennsylvania; Mrs. A. Haines Lippincott, Camden, New Jersey.

Directors for one year: Mrs. F. P. Gengenbach, Denver, Colorado; Mrs. William E. Parke, Philadelphia, Pennsylvania; Mrs. J. T. Christison, St. Paul, Minnesota.

CHAIRMEN OF COMMITTEES

Organization: Mrs. A. T. McCormack, Louisville, Kentucky.

Health Education: Mrs. George H. Hoxie, Kansas City, Missouri.

Hygeia: Mrs. A. B. McGlothlan, St. Joseph, Missouri.

Publicity: Mrs. T. C. Terrell, Fort Worth, Texas.

Program: Mrs. Southgate Leigh, Norfolk, Virginia.

Finance: Mrs. G. Henry Mundt, Chicago, Illinois.

Entertainment: Mrs. William Kuykendall, Eugene, Oregon.

Public Relations: Mrs. E. H. Cary, Dallas, Texas.

Revision of By-Laws: Mrs. Morris Fishbein, Chicago, Illinois.

SPECIAL APPOINTMENTS

Auditor: Mrs. C. W. Roberts, Atlanta, Georgia.

Historian: Mrs. E. V. De Pew, San Antonio, Texas.

Committee on Health Films: Chairman, Mrs. John O. McReynolds, Dallas, Texas.

Committee on Resolutions: Chairman: Mrs. J. N. Hunsberger, Norristown, Pennsylvania.

Committee on Credentials and Registrations: Chairman, Mrs. James N. Brawner, Atlanta, Georgia.

Special Advisory Committee: Mrs. S. C. Red, Houston, Texas; Mrs. Seale Harris, Birmingham, Alabama.

FRANKLIN DISTRICT MEDICAL SOCIETY

The September meeting of the Franklin District Medical Society was held at the Weldon Hotel on Tuesday, September 18, 1928.

The program:

Orthopedics (illustrated by actual cases), Dr. Harry R. Wheat, Springfield, Mass.

Hypertension, Dr. Howard Kemp, Greenfield, Mass.

THE ANNUAL MEETING OF THE NEW HAMPSHIRE SURGICAL CLUB

The 31st annual meeting of the New Hampshire Surgical Club will be held at Gray's Inn, Jackson, N. H., Monday, September the 24th, 1928, beginning at 10 A. M. with the presentation of "Preoperative Treatment" by James W. Jameson, M.D., Concord, N. H.; "Postoperative Treatment" by David W. Parker, M.D., Manchester, N. H.; Discussion by George C. Wilkins, M.D., Manchester, N. H.; James B. Woodman, M.D., Franklin, N. H.; Clifton Abbott, M.D., Laconia, N. H.; Emery Fitch, M.D., Claremont, N. H.

The morning session will be in the nature of a round table conference. The afternoon meeting will open at 1 o'clock with the annual business meeting and the election of officers. Program to follow:

"Gunshot wounds of the abdomen with report of case." President, Elmer M. Miller, M.D., Woodsville, N. H. Discussion: Fred P. Claggett, M.D., Newport, N. H.; F. E. Spear, M.D., Woodsville, N. H.

"Septicemia with Metastatic Osteomyelitis," John P. Bowler, M.D., Hanover, N. H.; John Boardman, M.D., Hanover, N. H. Discussion: J. F. Gile, M.D., Hanover, N. H.; A. T. Downing, M.D., Littleton, N. H.

"Industrial Accident Surgery," Murray A. Towle, M.D., Manchester, N. H. Discussion: Phillip McQuestion, M.D., Nashua, N. H.; John C. Lawlor, M.D., Dover, N. H.

"Surgical Problems," Frank Lahey, M.D., Boston, Mass. Discussion: B. G. Moran, M.D., Nashua, N. H.; Tom Luce, M.D., Portsmouth, N. H.; Ira J. Prouty, M.D., Keene, N. H.

Banquet at 6:30 P. M. A. T. Downing, M.D., Littleton, N. H., toastmaster. After-dinner speakers: Elmer M. Miller., M.D.; Daniel C. Norton, M.D.; Frank Lahey, M.D., Boston, Mass.; Donald Frazer, D.D., Rochester, N H.

Orchestral and vocal music will be interspersed during the banquet, which will be followed by dancing. A week-end outing for members, their families and guests will precede the meeting during which golfing, fishing, dancing, scenic beauty, including a trip to top of Mt. Washington, will be available. Special rates have been arranged at the Inn.

This will be the first meeting of the New Hampshire Surgical Club held in the northeastern section of the state. The program is particularly attractive. Returns indicate a large meeting.

The officers are:

President, Elmer M. Miller, M.D., Woodsville, N. H.

Vice-President, Daniel C. Norton, M.D., Manchester, N. H.

Secretary and Treasurer, John F. Holmes, M.D., Manchester, N. H.

Executive Committee, President and Secretary-Treasurer ex officio; J. F. Gile, M.D., Hanover, N. H.; Carlton R. Metcalf, M.D., Concord, N. H.; Timothy F. Rock, M.D., Nashua, N. H.

MEETING OF THE INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The Medical Profession of North America is invited to attend the International Assembly of the Association to be held at Atlanta, Georgia, October 12 to October 19 inclusive 1928.

The program has been arranged in co-öperation with the Fulton County Medical Society and the Medical Association of Georgia. Lewellys F. Barker is the President and Edwin Henes, Jr., the Executive Secretary.

In addition to the opportunity of an enjoyable visit to this historic city of the South a scientific program has been arranged of unusual interest. The social features of the occasion are especially alluring.

The Association is purely a Post-graduate organization and it exercises no political or legislative duties. Its main purpose is to present to the medical profession the approved advancement in medical science and research as well as the practical side of medical study.

Pre-Assembly Clinics will be conducted October 12 and 13.

The participating members include many of the most prominent leaders in the various departments of medicine.

Boston will be represented by Dr. W. M. C. Quinby, Dr. Elliott P. Joslin, Dr. Walter B. Cannon and Dr. F. W. Lahey.

The various subjects in the Diagnostic Clinics will be dealt with by the following named physicians: Drs. C. J. Miller, W. A. Bastedo, J. M. T. Finney, J. S. Horsley, D. C. Balfour, L. R. DeBuys, J. F. Erdmann, P. P. Vinson, T. G. Orr, J. T. Case, G. E. Waugh, J. B. Deaver, Charles Macauley, J. S. McLester, James Dundan-Grant, F. W. Marlow, J. O. Polak, H. H. Cabot, William E. Lower, W. B. Coley, J. C. Bloodgood, H. G. Beck, H. H. Young, J. F. McCarthy, Hugh Thursfield, V. C. Hunt, Edmund L. Gros, A. Ralph Thompson, O. Beuttner, W. A. White, William Ibbotson, Harlow Brooks, W. D. Haggard, V. C. Hunt, C. A. Hamann, W. E. Dandy, E. P. Joslin, D.

J. Cranwell, J. E. R. McDonagh, W. B. Cannon, T. P. Dunhill, G. P. Müller, L. S. T. Burrell, W. L. Keller, C. A. Hedblom, J. M. Waugh, L. S. Dudgeon, W. D. Ayer, C. A. Elliott, A. D. Bevan, C. H. Frazier, F. H. Lahey, Farquhar Macrae, K. M. Lynch, S. R. Roberts, J. L. Bollmann, A. M. Snell, L. W. Fox, H. C. Naffziger, W. W. Graves, Otto F. Leyton, J. Howell Evans, Archibald Young, Jack Witherspoon, Morris Roch, Donald Core, L. F. Barker, D. D. Lewis, H. A. Christian, John Phillips, G. W. Crile, E. S. Smith, J. B. McElroy, A. D. Warthin, John Phillips, L. L. Cassidy, D. D. Lewis, Sir Farquhar Buzzard, L. F. Barker, and C. H. Mayo.

The usual reduced railroad fares have been arranged.

For full details apply to Dr. William B. Peck, Managing Director, Freeport, Illinois.

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

At Gardner State Colony, Tuesday, Oct. 23, by invitation. Program by Staff Colony.

Tuesday, Jan. 22, 1929, at Henry Heywood Memorial Hospital, Gardner, by invitation. Program by Staff.

Annual meeting the fourth Tuesday in April.

SOCIETY MEETINGS

September 24—The annual meeting of the New Hampshire Surgical Club. For complete notice see page 589.

September 24-28—Sixth Conference of the International Union Against Tuberculosis. For complete notice see page 349, issue of August 16.

September 24-25-26—Program of the Sixth New England Health Institute, Burlington, Vermont. For complete notice see page 543, issue of September 13.

October 1-12—The Graduate Fortnight of the New York Academy of Medicine. For complete notice see page 396, issue of August 23.

October 8-12—Clinical Congress of the American College of Surgeons. For complete notice see page 545, issue of September 13.

October 8-13—Clinical Congress of Physical Therapy and Seventh Annual Meeting American College of Physical Therapy. Complete notice appears on page 545, issue of September 13.

October 12-19—Inter-state Postgraduate Medical Association of North America. Detailed notice appears on page 589.

November 9-10—New England Surgical Society, Tenth Meeting. Complete notice appears on page 542.

December 3-7—Radiological Society Convention. Detailed notice appears on page 712, issue of May 17.

DISTRICT MEDICAL SOCIETIES

Barnstable District Medical Society

Schedule of Meetings: November 1, 1928, February 7, 1929, May 2, 1929.

Berkshire District Medical Society

The especial features of the October meeting will be addresses by Dr. George Crile of Cleveland, Dr. Emil Novak of Johns Hopkins, Dr. Willis Campbell of Memphis, Tennessee, and Dr. Thomas Ordway of Albany, N. Y.

A complete program will be published later.

HUGH J. DOWNEY, Secretary.

Bristol North District Medical Society

September 20—Fall meeting will be held at the Bristol County Tuberculosis Hospital, Oak Hill Avenue, Attleboro, at 2 P. M.

April 18, 1929—Spring meeting.

Bristol South District Medical Society

Meetings will be held November 7, 1928, and May 2, 1929. Complete notices will appear later.

Essex North District Medical Society

October 17, 1928 (Wednesday afternoon), at 2 P. M.—A joint meeting with Middlesex East and North, and Essex South will be held at Essex Sanatorium at Middleton. (Telephone Danvers 300-W.)

November 1, 1928 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill (Tel. 3430), at 2 P. M.

January 2, 1929 (Wednesday)—Semi-annual meeting at Haverhill, at 12:30 P. M.

May 1, 1929 (Wednesday)—Annual meeting at Lawrence, at 12:30 P. M.

May 2, 1929 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. (Tel. 3430.)

Franklin District Medical Society

Meeting will be held on the second Tuesday of November, January, March and May.

Middlesex East District Medical Society

The following schedule of meetings has been arranged for the coming year:

October 17—Middleton. (Joint meeting with Essex North and South and Middlesex North.)
November 14—Woburn.
January 16—Wakefield.
March—Reading.
May—Melrose.

Subjects and speakers to be arranged by committees in each city or town.

Middlesex North Medical Society

October 17—A combined meeting with Essex North and South.

The winter meeting will be held the last Wednesday in January.

The annual meeting will be held the last Wednesday in April.

Middlesex South District Medical Society

September 26, 1928—Semi-annual meeting.
March 27, 1929—Joint meeting with the Suffolk and Norfolk Districts.
April, 1929—Annual meeting. Definite date to be announced later.

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District Medical Society for the 1928-29 Season. The schedule below will be adhered to as strictly as possible. The carrying out of the proposed plan will, of course, depend upon the acceptances of invitations extended to the speakers. Minor changes may be necessary.

October 30—Pondville Hospital. Dr. Lyman F. Jones, Superintendent. Inspection, 4 P. M.; Business Meeting at 5:30; Papers by the Staff; Collation.

November 21—Boston Medical Library. In combination with Suffolk District and Middlesex East District Societies. Subject, Physiotherapy—Dr. F. B. Granger.

January 29—Roxbury Masonic Temple. Subject, Treatment of Varicose Veins by the Injection Method—Dr. E. E. O'Neil. Dr. Homans will open the discussion.

February 25—Roxbury Masonic Temple. Dr. W. R. Ohler. Subject to be announced. Discussion to be opened by Dr. A. A. Hornor.

March 29 — Roxbury Masonic Temple. Subject and speakers to be announced.

May, 1929—Annual meeting program to be announced.

The Censors of the Society meet November 8, 1928, and May 9, 1929, at the Roxbury Masonic Temple, Warren Street, Roxbury, at 4 P. M., for the examination of candidates.

BOOK REVIEWS

The Eye. By C. W. Rutherford, M.D. A book of 379 pages with index, 305 illustrations, and 12 plates in color. D. Appleton and Company. 1928.

The only true guide to the usefulness of a new book is its sale volume over a sustained period. In attempting to judge a new book in a field already crowded by many excellent texts, one must consider not only its contents, but also the way it is likely to meet the needs for which it is written. In his preface, Rutherford states that the needs of the general practitioner and student of medicine have had first consideration in the preparation of his text.

For the busy general practitioner, a useful book must be brief, and intensely practical. It must offer him help in his defects in practice. So far as eyes are concerned, since one of the common mistakes of the practitioner is failure to recognize early glaucoma, it seems that a lucid discussion of glaucoma should have the first position. Other subjects to re-

ceive attention should be ocular injuries, corneal ulcers, iridocyclitis, and atrophy of the optic nerve. For the practitioner, it would be just as well to omit details of ophthalmic diagnosis, and the multiple surgical procedures, which are for the trained ophthalmologist alone.

For the student of medicine, who has more time, and who is supposed to acquire method, an anatomically arranged, sufficiently illustrated and indexed, and above all a well written book is desired. Rutherford's work meets all of these requirements, although in the reviewer's opinion it does not meet them as well as other books already in the field. One would like to see in a modern text book of ophthalmology for the use of medical students much more emphasis placed upon the technic and significance of perimetry. While less important one would like to find at least the helpful slit-lamp findings. Finally, unless one were writing expressly for the student of ophthalmic surgery, rather than for the student of general medicine, it is a question whether one would choose to devote 26 pages to surgery of the eyelids, and only 12 pages to the anatomy and diseases of the eyelids.

The uncomplaining medical student has much to bear at the hands of authors in all the medical specialties.

Ultra-Violet Rays in the Treatment and Cure of Disease. By PERCY HALL. Third Edition. C. V. Mosby Company, St. Louis, 1928.

The third edition of this book sets forth the results that the author believes can be obtained by means of ultra-violet ray radiation, either local or general or by a combination of both. Following the conservative introductions by Leonard Hill, Ernst and the author himself, one would expect that the body of the book would present a sane and reasonable evaluation of the correct place of the ultra-violet ray in therapeutics. Unfortunately, the author does not escape the fanaticism which in the past has attended the observations of practically all ultra-violet ray enthusiasts.

Brilliant results were obtained in lupus, alopecia, both discrete and general, seborrhea, acne, furunculosis, acute and chronic eczema, intertrigo, prurigo, ringworm both of scalp and body, scleroderma, urticaria, pernio, pruritis and pruritis vulvae. The preceding does not coincide with the views of most authorities on dermatology who where a beneficial effect is desired in treating skin diseases by means of a physiotherapeutic measure almost invariably resort to the Roentgen ray. It is doubtful if as much success can be obtained with the use of the ultra-violet ligfit as with the application of salves and lotions.

The author finds the ultra-violet ray of distinct value in all forms of arthritis, in "lumbago," pleurodynia, chronic fibrositis and neuritis. He explains the subject's improvement and cure by the ultra-violet ray's "tonic effect, analgesic power, its raising of the resistance of the body and capacity for the increasing of the elimination of waste and its power of stimulating absorption and cell fixation of mineral salts."

Improvement noted in mentally backward children following ultra-violet radiation is explained on the grounds of a possible effect on the ductless glands. Distinct benefit was noted in both acute and chronic anterior poliomyelitis, in the Parkinsonian stage of post-encephalitis lethargica, in disseminated sclerosis and in locomotor ataxia.

Employment of actinotherapy is recommended in pulmonary tuberculosis, acute laryngitis, chronic nasal and bronchial catarrh, asthma, hayfever and whooping cough. Definite improvement or cure was noted in all these conditions.

Its use is extolled in both hypothyroidism and hyperthyroidism. In the latter slowing of the pulse, reduction of the goitre and exophthalmos were obtained. Of the metabolic diseases that could be remedied by ultra-violet radiation, gout, diabetes and obesity were cited as outstanding examples.

Of the eye affections, distinct benefit was obtained in styes, blepharitis, corneal ulcer and early cataract formation.

Deafness, pyorrhea, dyspepsia, hyperchlorhydia, constipation, gastric and duodenal ulceration, simple and pernicious anemia and Hodgkin's disease were also distinctly benefited. The writer explains the beneficial effects that he obtained in constipation, cardiac affections, sub-involution, etc., as due to the action of the light on both the striped and unstriped muscle.

Recorded are the cases of leucorrhea, cervical erosions, dysmenorrhea, menorrhagia and hemorrhoids which presented distinct improvement following ray treatment. The author states that he has seen varicosities diminish in size and hypertension greatly reduced.

The contention presented that the ultra-violet ray administered together with the Roentgen ray acts as an antagonist to the latter and prevents an X-ray burn is entirely contrary to the experimental and clinical evidence of Mackee and Andrews. In the latters' work on the subject, it was conclusively shown that the ultra-violet ray lowers the patient's tolerance to roentgen irradiation.

After reading the book, one is supposed to conclude that with the advent of ultra-violet radiation the millennium in the treatment of disease has been reached. The book should form an excellent advertising medium for the manufacturers of ultra-violet ray apparatus. It is hoped that it does not reach the laity.

The Opium Problem. By CHARLES E. TERRY, M.D., and MILDRED PELLENS, for The Committee on Drug Addictions, in collaboration with The Bureau of Social Hygiene, Inc. New York, 1928. xvi+1042 pp.

This book is the report of two investigators working under a Committee on Drug Addictions of the Bureau of Social Hygiene. The authors find that that is no definite way of estimating the exact numbers of users of drugs, but they believe that there is a large number in the country and that the problem connected with them is a major medico-social problem. The habit is progressively developed through many influences and no one cause can be found to account for all of the cases. A continued use of the drug, however, over a sufficiently long period to produce withdrawal distress of some kind to the patient seems to be common to all except those cases where the drug is taken for the euphoric effect.

Chapters are given to the pathology of drug-taking and to the types of users. There is no uniform type of treatment; the majority of the various forms in

vogue are simply based on the question of separating the patient from the drug. Most physicians recognize that there are certain pathological changes in individual cases and that no one method is applicable to all of them.

The larger part of the book is given over to a consideration of the control of opium and its derivatives, both from the international, national, and municipal aspects. As an appendix one finds the report of the International Opium Conventions of 1912 and 1925, as well as copies of our own narcotic and drug acts.

The book is well indexed and contains a good bibliography. It is a valuable addition to our knowledge of a complex subject.

Modern Medicine, Its Theory and Practice. Edited by SIR WILLIAM OSLER. Third edition, thoroughly revised, re-edited by Thomas McCrae, assisted by Elmer H. Funk. Vol. VI. Diseases of the Nervous System; Diseases and Abnormalities of the Mind. Pp. 964. Lea & Febiger, Phila., 1928.

The third edition of the volume on Diseases of the Nervous System in Osler's *Modern Medicine* does not differ in its general aspect from the same volume in the second edition. Of the twenty contributors to the volume, two have died. Their papers have been revised by other hands.

The book is divided into twenty-four chapters on diseases of the nervous system and one long chapter by Dr. Edward Strecker on "Diseases of the Mind", the latter being a well written abstract of the textbook on "*Clinical Psychiatry*" by Strecker and Ebaugh. In spite of the high standard set by the majority of the papers, there is a certain unevenness in them. Excellent contributions, which have been carefully revised and brought up to date, are those of Harvey Cushing on "Intracranial Tumors" and "Hydrocephalus", Smith Ely Jelliffe's chapter on "Hysteria", and a new, expanded chapter by J. Ramsay Hunt on "Encephalitis Lethargica". Some of the other chapters apparently have been but very slightly revised. For instance, it is rather surprising to read, in a textbook published in 1928, the following sentence in a paragraph on "Subacute Combined Sclerosis of the Spinal Cord": "The blood changes so commonly found in these cases are more often of the nature of a secondary anemia than of the pernicious variety, and are probably associated conditions rather than etiological factors, certainly in the majority of cases" (p. 128). Also in the chapter by B. Sachs on "Syphilitic Diseases of the Central Nervous System" one finds the following: "The writer's experience during the past ten years has strengthened his opposition to the intraspinous treatment, especially in general paresis" (p. 869, foot-note). Such views are certainly not those held by the majority of physicians treating neurosyphilis.

The volume, however, as a whole is a very excellent summary of our knowledge of diseases of the nervous system and many of the chapters of this new edition have been carefully brought up to date by their authors.

Calcium Therapy. By JOHN AULDE, M.D. Published by John Aulde, Philadelphia, Pa.

This is a book of 420 pages published by the writer. It is a long summary of opinions from his practical experience and deals practically not at all with what is known from the literature. It contains testimonials of effects of his medication from other physicians and it ascribes many of the ills of mankind to calcium deficiency.

In the opinion of the writer, most of these uses of calcium are not justified by the facts which we at present know of inorganic salt metabolism, and from the point of view of modern scientific medicine, this book would seem to add little to our true knowledge as we now understand it.

Physiology of Exercise. By JAMES HUFF MCCURDY, A.M., M.D., M.P.E. The Lea & Febiger, Philadelphia.

This book of 270 pages is obviously written for men interested in physical culture rather than for the physician. It deals largely with the effects on blood pressure, vital capacity and general neuro-muscular tone as they are affected by exercise, and it is with the attitude of an instructor in physical exercise that these are attacked. For such an individual, this book would prove interesting and would probably be of considerable value in the understanding of the amount of exercises individuals can do, but it is not a book which would prove of great profit to a physician who is interested in the modern scientific knowledge of the general physiological effects of muscular activity.

Surgical Clinics of North America. April.

This volume gives a rapid insight into some of the more modern surgical procedures as carried out by men of experience in their special line of work. Erdmann is always sound and gives good advice about hysterectomy in fibroids and cholecystectomy in gall bladder disease. Lilienthal gives a good discourse on the surgery of pulmonary tuberculosis, illustrating two methods of diminishing residual cavities after thoracotomy. Moorhead gives some new ideas in the treatment of arthritis surgically; physiotherapy, plaster-block splints, fractures of the head of the radius and a unique motor-driven traction apparatus for immediate reduction of fractures of the leg; the latter practical only for the large clinic, but ingenious and possibly of some value. Beer's well illustrated article on Benign Enlargement of the Prostate is of general interest. Sheehan's photographs on plastic surgery of the face are, as usual in such cases, quite striking. His note on windshield wounds of the face deserves special comment inasmuch as it is such a common injury and so rarely well handled. Selinger on Chronic Appendicitis has done a good turn for the "ever-ready" surgeon by bringing to light some real cases of this questionable condition. It is the hope of the reviewer that he has not emphasized this too strongly. Strauss and Globus present an unusually clear article on a group of twelve brain tumors. Good chapters on Pulmonary Suppuration by Kramer, Urinary Obstruction by Pugh, Cancer of the Breast by Gottesman, Arthritis by Gratz, Wright and Mackenzie, Fractures of the Humerus by Colp and Findlay, and various surgical subjects by Dudley complete the volume; on the whole good, instructive and worthy of reading.

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